



V22182

Zentralwerkstatt und
Ersatzteildepot
für ORION-Produkte



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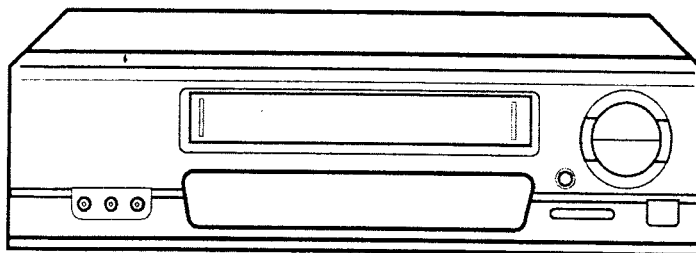
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Service Manual

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ORION

VIDEO CASSETTE RECORDER



ORIGINAL CHASSIS CODE A

VH 2898 HiFi
MD 8910

VR 2985
LT 8910

VN 945
MM8932

Bestell-Nr.:

SM2898

SPECIFICATIONS

Power Source:	AC 230V, 50Hz	Hi-Fi Audio Signal:	Dynamic range: 75 dB
Power Consumption:	Approx. 17W		Frequency Range: 20 Hz to 20 KHz (± 6 dB)
Power Consumption stand by:	Less than 5W		Wow and Flutter: Less than 0.01%WRMS
Operation Temperature:	5°C to 40°C	Audio Track:	3 track (Hi- Fi Sound 2 track, Normal 1 track)
Television System:	CCIR: 625 lines, 50 fields	RF Output Channel:	36 (23~69, Adjustable) channel
	PAL B/G	Tape Speed:	SP: 23.39mm/s (PAL), 33.35mm/s (NTSC)
	NTSC Playback (PAL 60Hz)		LP: 11.69mm/s (PAL)
Video Recording System:	2 rotary heads, helical scanning system	F.FWD/REW Time:	Approx. 2 minutes 30 seconds (with E-180 Cassette Tape)
	Luminance: FM azimuth recording	Input Level:	VIDEO: 1.0Vp-p, 75 ohm unbalanced
	Color signal: Converted subcarrier phase shift recording		AUDIO: RCA: 300mV, 50k ohm unbalanced SCART: 500mV, 50k ohm unbalanced
Heads:	Video: 4 rotary heads	Output Level:	VIDEO: 1.0Vp-p, 75 ohm unbalanced
	FM Audio: 2 rotary heads		AUDIO: RCA: 390mV, 1k ohm unbalanced SCART: 500mV, 1k ohm unbalanced
	Erase: 1 full track erase head	Weight:	4.0 Kg
	Audio/Control: 1 stationary head	Dimensions:	380 (W) x 95 (H) x 272 (D) mm
Tape Width:	12.65mm high density tape		

Design and specifications are subject to change without notice.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a  mark, the designated parts must be used.

3. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

4. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE

You can find it in the back of your unit.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT NOTICE

The remote control for this model can be selected the Custom code 1 and Custom code 2.

•How to selection;

Custom code 1 : Press the Power key and 1 key on the remote control simultaneously for more than 2 seconds.

Custom code 2 : Press the Power key and 2 key on the remote control simultaneously for more than 2 seconds.

The Custom code 1 is only available for the VCR unit but the Custom code 2.

When selected the Custom code 2 by mistake, just remove the batteries from the remote control for the moment or select the Custom code 2 as described above.

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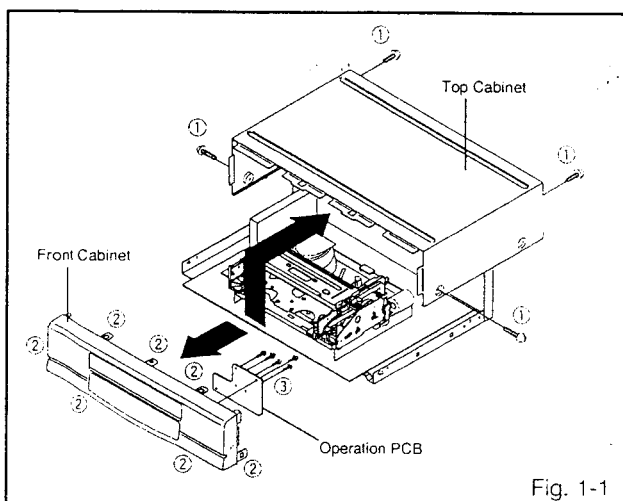
DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

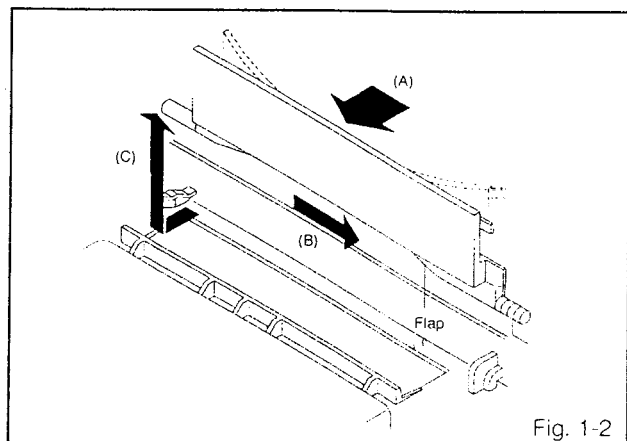
1-1: TOP CABINET, FRONT CABINET AND OPERATION PCB (Refer to Fig. 1-1)

1. Remove the 4 screws ①.
2. Remove the Top Cabinet.
3. Disconnect the following connector: (CP651 3 pins).
4. Unlock the 7 supports ②.
5. Remove the Front Cabinet.
6. Remove the 5 screws ③ and remove the Operation PCB.



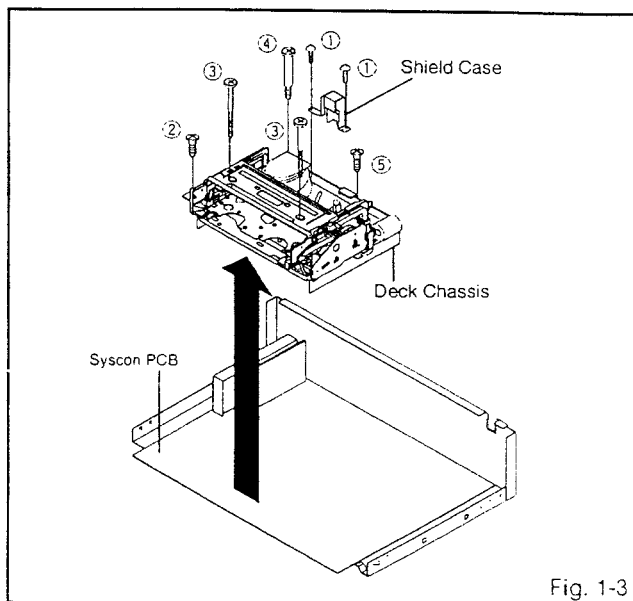
1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90° and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).



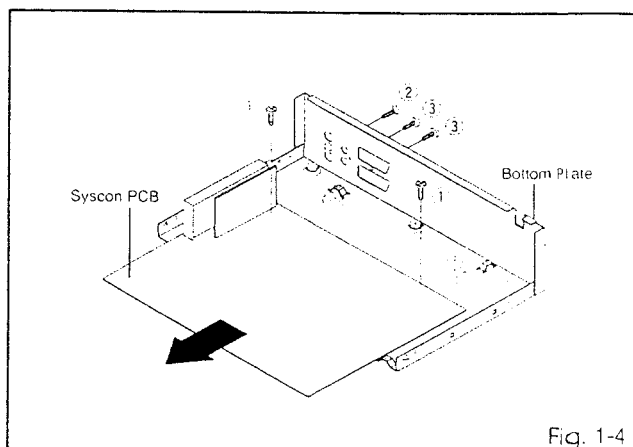
1-3: DECK CHASSIS (Refer to Fig. 1-3)

1. Remove the 2 screws ① and remove the Shield Case.
2. Remove the screw ②.
3. Remove the 2 screws ③.
4. Remove the screw ④.
5. Remove the screw ⑤.
6. Disconnect the following connectors: (CD1001 2 pins, CP4002 2 pins, CP4101 10 pins, CP4102 5 pins and CP4106 6 pins) and remove the Deck Chassis.



1-4: SYSCON PCB AND BOTTOM PLATE (Refer to Fig. 1-4)

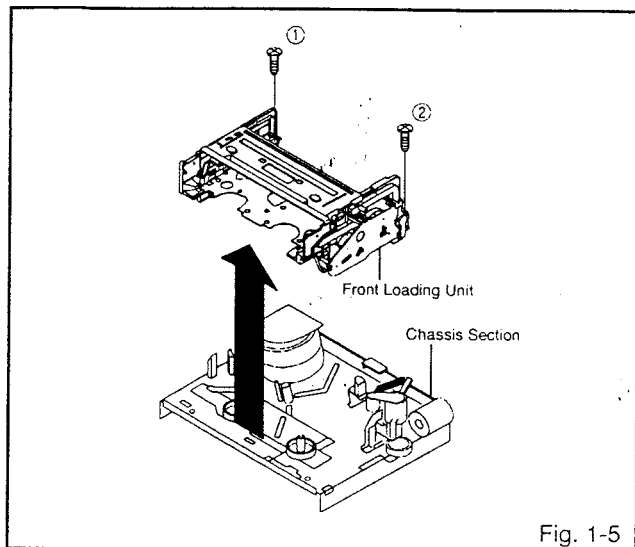
1. Remove the 2 screws ①.
2. Remove the screw ②.
3. Remove the 2 screws ③.
4. Remove the Syscon PCB.



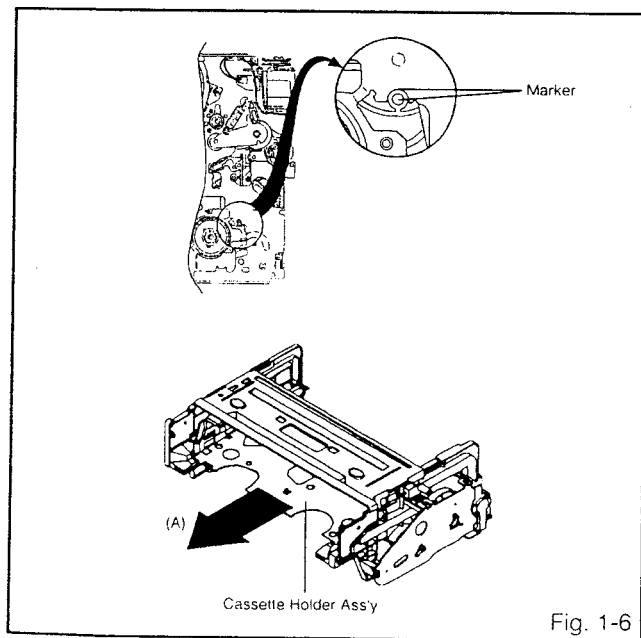
DISASSEMBLY INSTRUCTIONS

1-5: FRONT LOADING UNIT (Refer to Fig. 1-5)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove the Front Loading Unit.



NOTE: When installing the Front Loading Unit, align the timing marks and pull the Cassette Holder Ass'y in the direction of arrow (A). (Refer to Fig. 1-6)



DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CAM GEAR (Refer to Fig. 2-1)

1. Unlock the support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever, Link Gear (R) , Cam Gear Ass'y and BOT Lever.

NOTES

1. When installing the BOT Lever, insert the BOSS into the hole of Link Gear (R).
2. When installing the Link Ass'y and Link Gear (R), align the timing Marks.

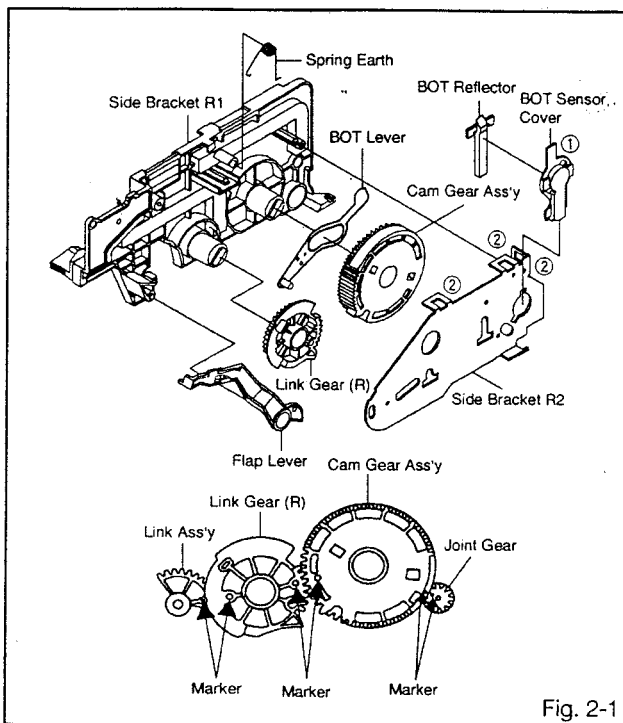


Fig. 2-1

2-2: TOP BRACKET / JOINT GEAR (Refer to Fig. 2-2)

1. Unlock the 4 supports ①.
2. Remove the Top Bracket.
3. Remove the Side Bracket R1 and Side Bracket L.
4. Unlock the support ②.
5. Remove the Joint Gear.
6. Remove the Bracket R Spring.

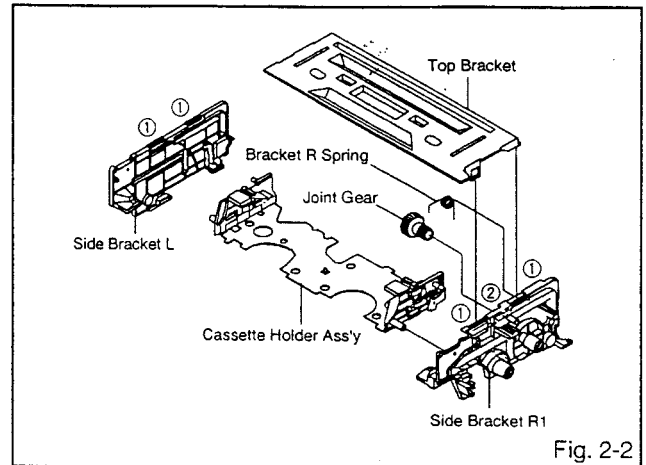


Fig. 2-2

2-3: LINK ASS'Y (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y, remove the Link Ass'y in the direction (B).

NOTE

Install the (B) first, then install the (A).

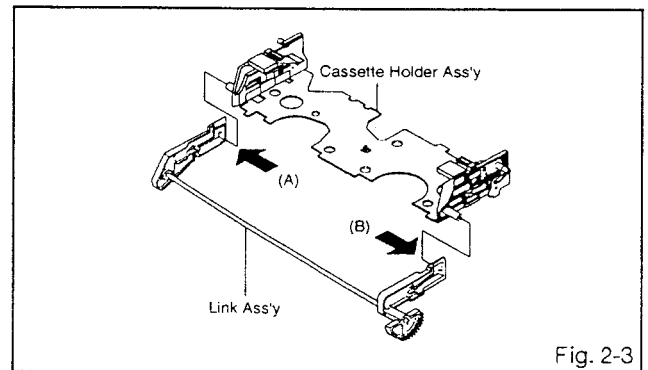


Fig. 2-3

2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.

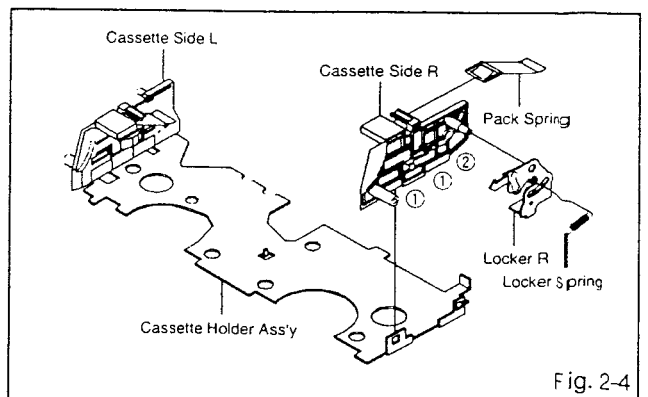


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

2-5: CASSETTE SIDE L (Refer to Fig. 2-5)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock the support ②.
6. Remove the Locker L.

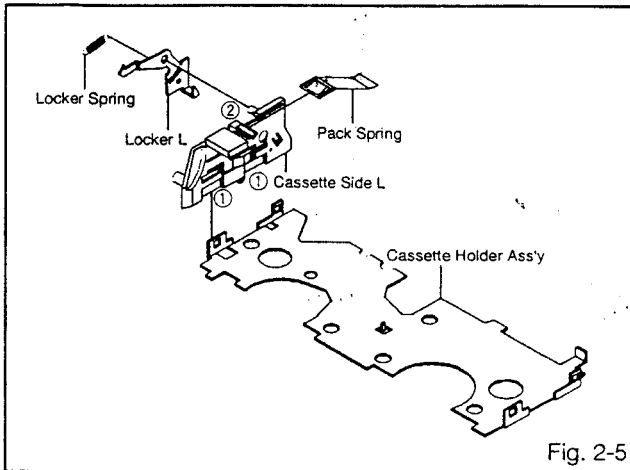


Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Ass'y and Main Brake T Ass'y.
6. Remove the Joint Arm.
7. Remove the Reflector LED 2.

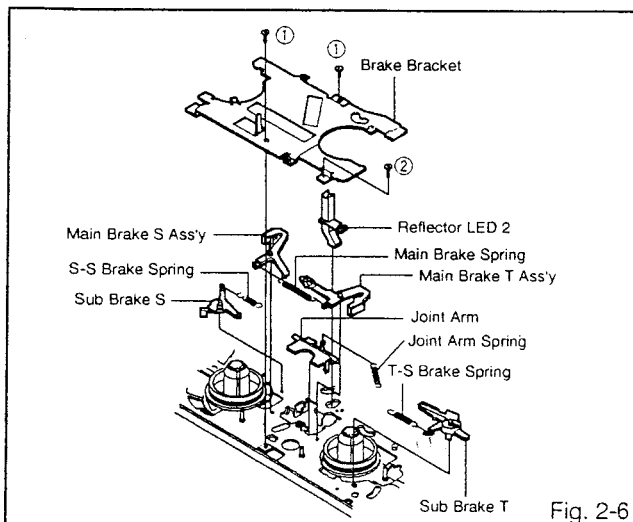


Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Ass'y.
5. Remove the Tension Band Ass'y.
6. Remove the Tension Lever 2 Ass'y.

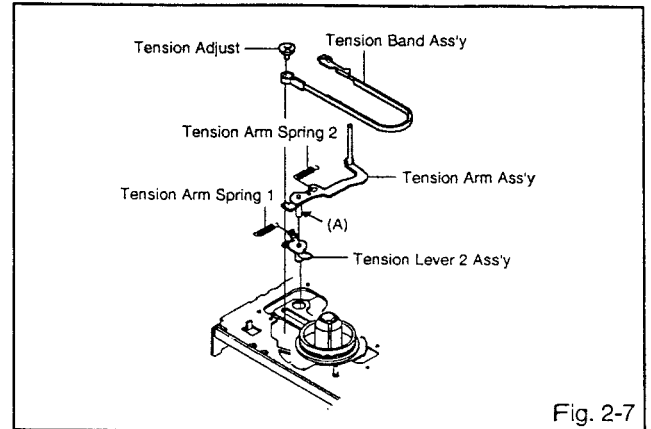


Fig. 2-7

NOTE

1. Install the Tension Band Ass'y without twisting it.
2. Turbine Oil (Lubricating Grade #150) the area marked with A in Fig. 2-7.

EX: KYOUDO Oil Sulaidasu #150
IDEMITSU Oil Super Multi #150

2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 of DISASSEMBLY INSTRUCTIONS.
 2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
 3. Clean the Reel Disk Shaft and put in height adjusting washers.
 4. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
 5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
 6. After oiling (Lubricating Grade #150) the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
- EX: KYOUDO Oil Sulaidasu #150
IDEMITSU Oil Super Multi #150
7. After installation, adjust the height of the Reel Disk.
(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)
 8. After installation, adjust and confirm the tension post position.
(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)

DISASSEMBLY INSTRUCTIONS

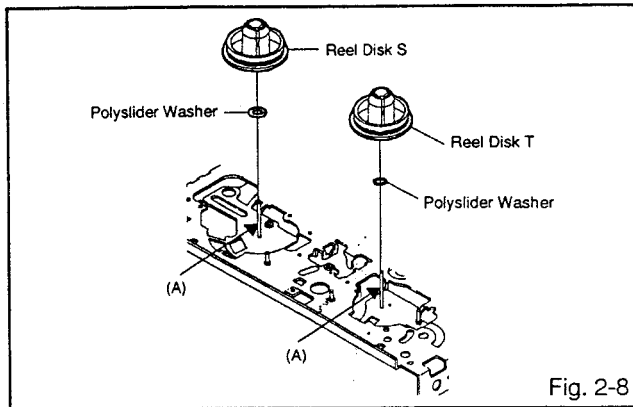


Fig. 2-8

2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear, Polyslider Washer ④, Spring Cam Pinch and Cam Pinch Roller.
8. Remove the Polyslider Washer ⑤ and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.

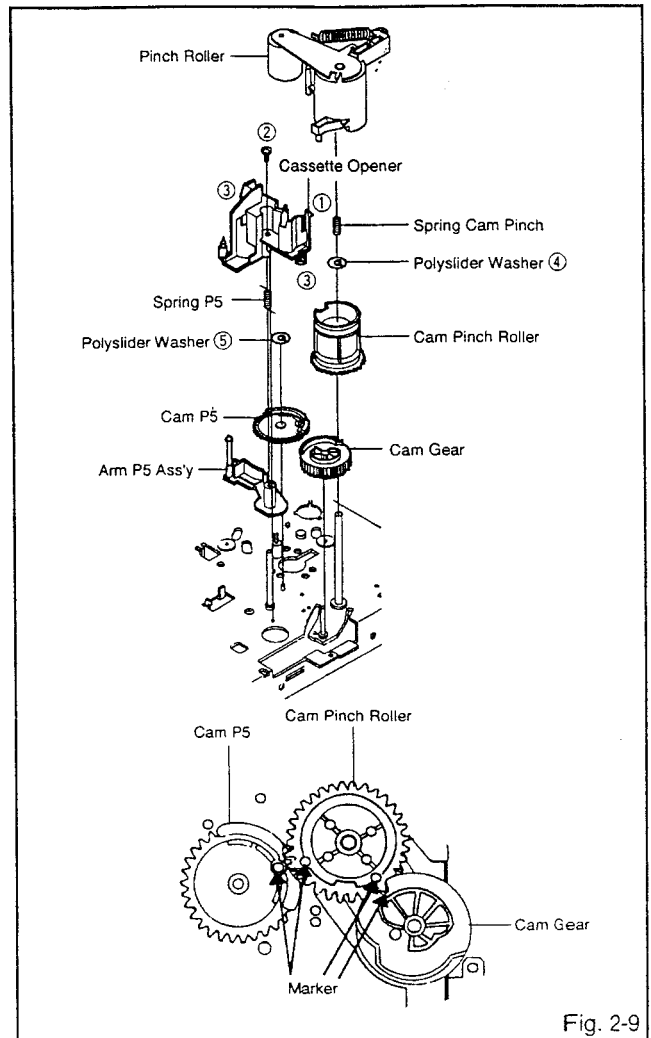


Fig. 2-9

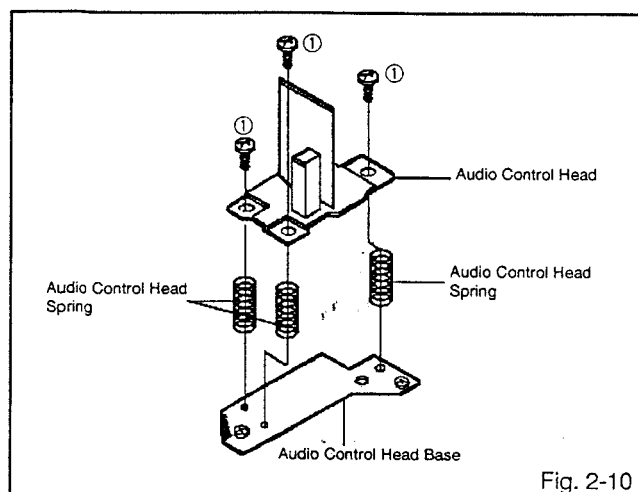
2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Remove the 3 screws ①.
2. Remove the 3 Audio Control Head Springs.
3. Remove the Audio Control Head.

NOTES

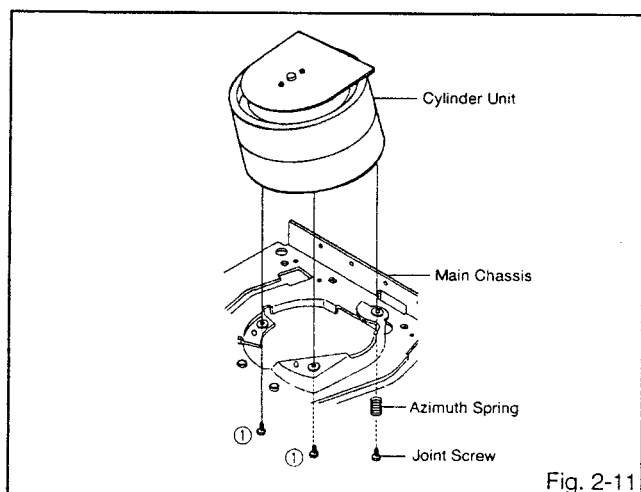
1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
 - a. MECHANICAL ADJUSTMENTS: ITEM 2-2
 - b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS



2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Remove the Joint Screw, then remove the Azimuth Spring.
2. Remove the 2 screws ①, then remove the Cylinder Unit from the Main Chassis.

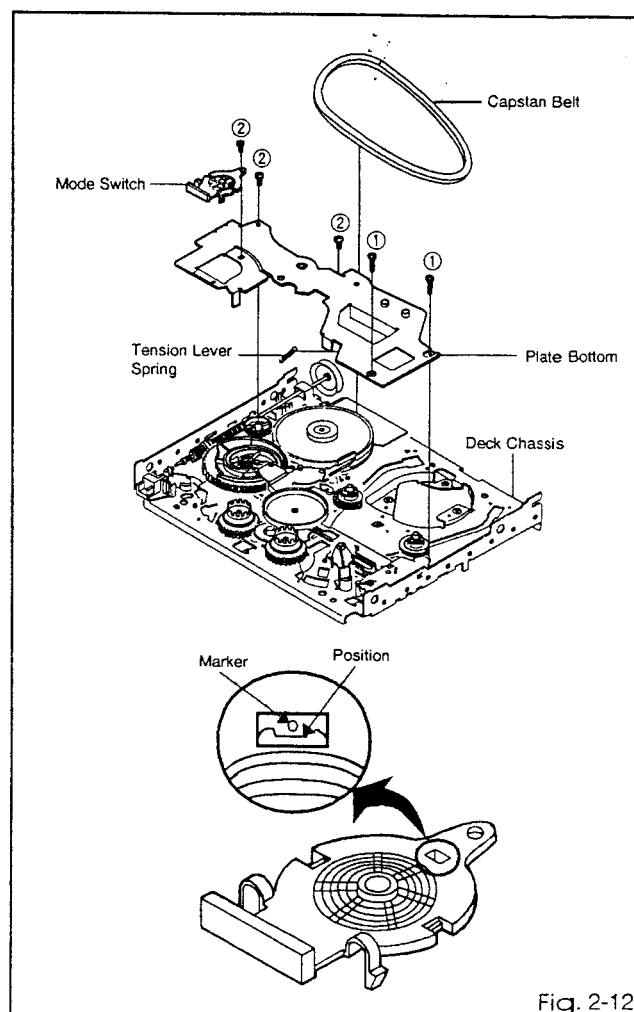


2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

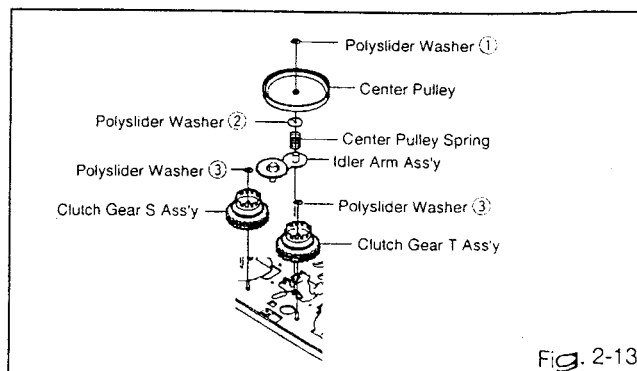
NOTE

When installing the Mode Switch, align the timing position.



2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the polyslider washer ①.
2. Remove the Center Pulley.
3. Remove the polyslider washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 polyslider washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.



DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Tension Holder.
6. Remove the Tension Lever.
7. Remove the Main Cam.
8. Remove the Middle Gear.
9. Remove the Main Rod Ass'y.
10. Remove the Tension Stopper.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

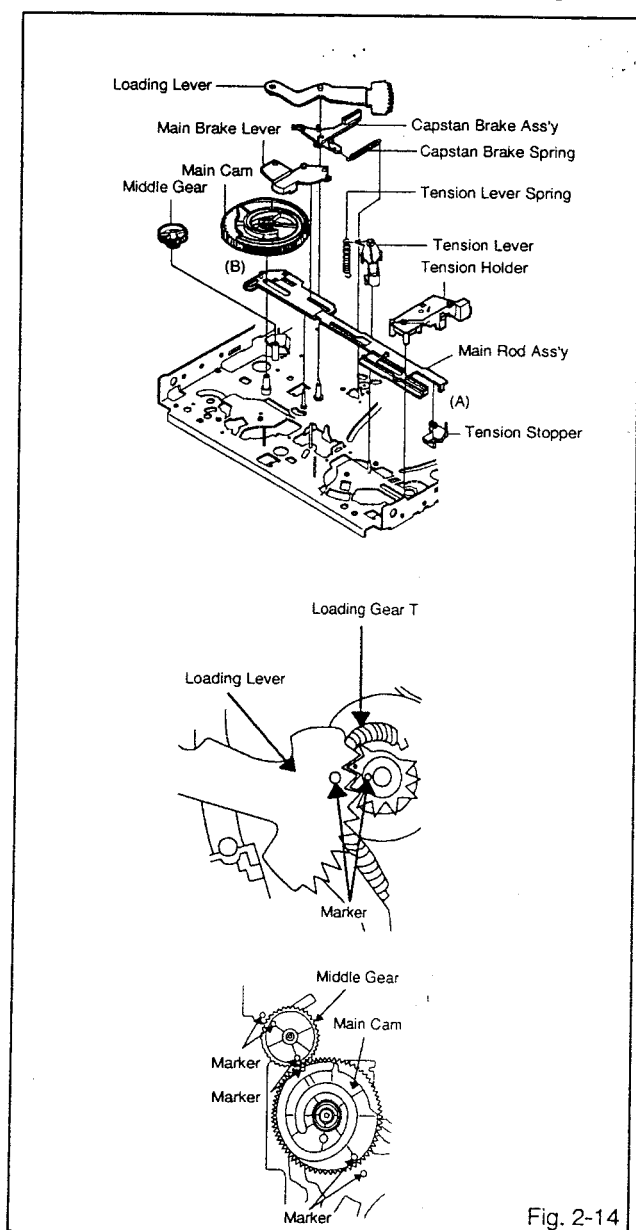


Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the 3 screws ①.
2. Remove the Capstan DD Unit.

NOTE

Use the specified screw to hold the Capstan DD Unit.

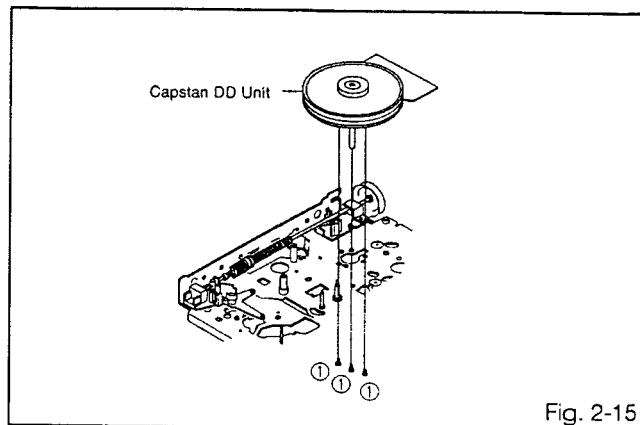


Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 4 screws ①.
2. Remove the Catcher S and Catcher T.
3. Remove the 2 CS Rings.
4. Remove the Inclined T Ass'y and Inclined S Ass'y.
5. Remove the Loading Gear T Ass'y.
6. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

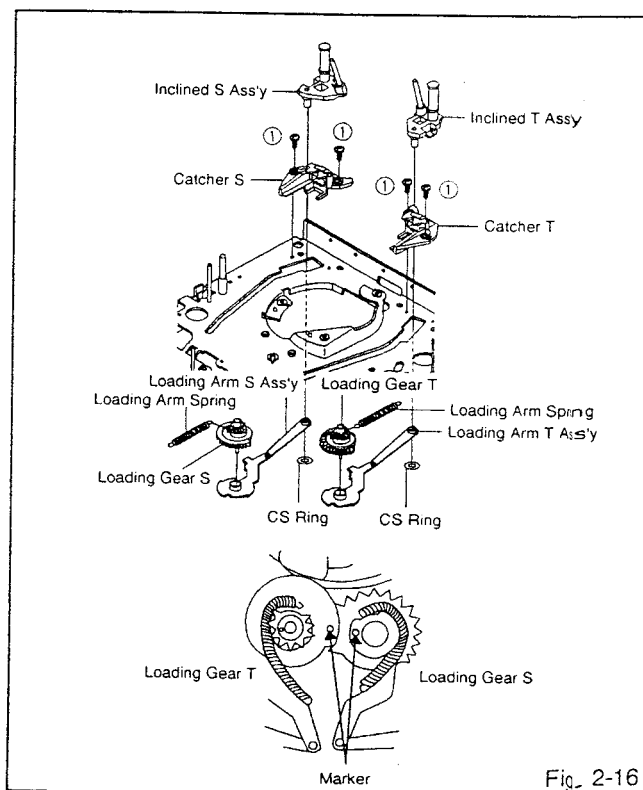


Fig. 2-16

KEY TO ABBREVIATIONS

A	A/C	: Audio/Control	H.SW	: Head Switch	
	ACC	: Automatic Color Control	Hz	: Hertz	
	AE	: Audio Erase	I	IC	: Integrated Circuit
	AFC	: Automatic Frequency Control		IF	: Intermediate Frequency
	AFT	: Automatic Fine Tuning		IND	: Indicator
	AFT DET	: Automatic Fine Tuning Detect		INV	: Inverter
	AGC	: Automatic Gain Control	K	KIL	: Killer
	AMP	: Amplifier	L	L	: Left
	ANT	: Antenna		LED	: Light Emitting Diode
	A.PB	: Audio Playback		LIMIT AMP	: Limiter Amplifier
	APC	: Automatic Phase Control		LM, LDM	: Loading Motor
	ASS'Y	: Assembly		LP	: Long Play
	AT	: All Time		L.P.F	: Low Pass Filter
	AUTO	: Automatic		LUMI.	: Luminance
	A/V	: Audio/Video	M	M	: Motor
B	BGP	: Burst Gate Pulse		MAX	: Maximum
	BOT	: Beginning of Tape		MINI	: Minimum
	BPF	: Bandpass Filter		MIX	: Mixer, mixing
	BRAKE SOL	: Brake Solenoid		MM	: Monostable Multivibrator
	BUFF	: Buffer		MOD	: Modulator, Modulation
	B/W	: Black and White		MPX	: Multiplexer, Multiplex
C	C	: Capacitance, Collector		MS SW	: Mech State Switch
	CASE	: Cassette	N	NC	: Non Connection
	CAP	: Capstan		NR	: Noise Reduction
	CARR	: Carrier	O	OSC	: Oscillator
	CH	: Channel		OPE	: Operation
	CLK	: Clock	P	PB	: Playback
	CLOCK (SY-SE)	: Clock (Syscon to Servo)		PB CTL	: Playback Control
	COMB	: Combination, Comb Filter		PB-C	: Playback-Chrominance
	CONV	: Converter		PB-Y	: Playback-Luminance
	CPM	: Capstan Motor		PCB	: Printed Circuit Board
	CTL	: Control		P. CON	: Power Control
	CYL	: Cylinder		PD	: Phase Detector
	CYL-M	: Cylinder-Motor		PG	: Pulse Generator
	CYL SENS	: Cylinder-Sensor		P-P	: Peak-to Peak
D	DATA (SY-CE)	: Data (Syscon to Servo)	R	R	: Right
	dB	: Decibel		REC	: Recording
	DC	: Direct Current		REC-C	: Recording-Chrominance
	DD Unit	: Direct Drive Motor Unit		REC-Y	: Recording-Luminance
	DEMOD	: Demodulator		REEL BRK	: Reel Brake
	DET	: Detector		REEL S	: Reel Sensor
	DEV	: Deviation		REF	: Reference
E	E	: Emitter		REG	: Regulated, Regulator
	EF	: Emitter Follower		REW	: Rewind
	EMPH	: Emphasis		REV, RVS	: Reverse
	ENC	: Encoder		RF	: Radio Frequency
	ENV	: Envelope		RMC	: Remote Control
	EOT	: End of Tape		RY	: Relay
	EQ	: Equalizer	S	S. CLK	: Serial Clock
	EXT	: External		S. COM	: Sensor Common
F	F	: Fuse		S. DATA	: Serial Data
	FBC	: Feed Back Clamp		SEG	: Segment
	FE	: Full Erase		SEL	: Select, Selector
	FF	: Fast Forward, Flipflop		SENS	: Sensor
	FG	: Frequency Generator		SER	: Search Mode
	FL SW	: Front Loading Switch		SI	: Serial Input
	FM	: Frequency Modulation		SIF	: Sound Intermediate Frequency
	FSC	: Frequency Sub Carrier		SO	: Serial Output
	FWD	: Forward		SOL	: Solenoid
G	GEN	: Generator		SP	: Standard Play
	GND	: Ground		STB	: Serial Strobe
H	H.P.F	: High Pass Filter		SW	: Switch

KEY TO ABBREVIATIONS

S	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	TR	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	UNREG	:	Unregulated
V	V	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	X'TAL	:	Crystal
Y	Y/C	:	Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Loading Motor Belt			■	■	●	Clean the rubber, and parts which the rubber touches.
Reel Belt			■	■	●	
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■	■	■	●	Clean the Head.

● : Replace ■ : Clean

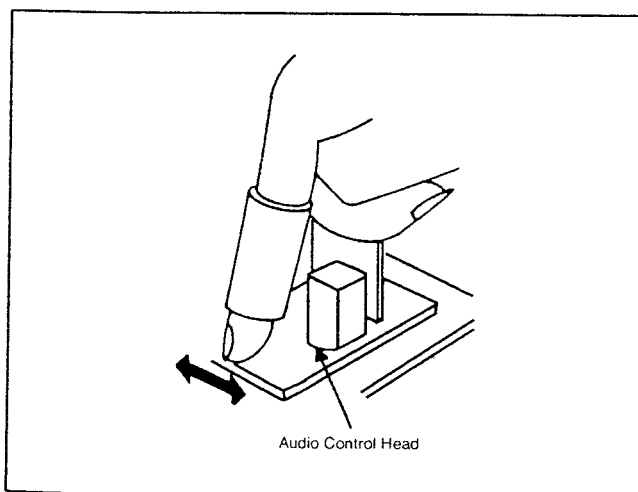
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. (Refer to the figure below)



2. TAPE RUNNING SYSTEM

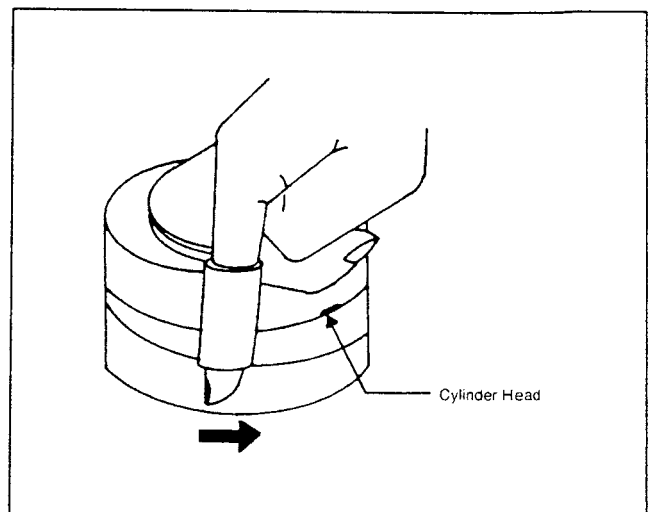
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). (Refer to the figure below)

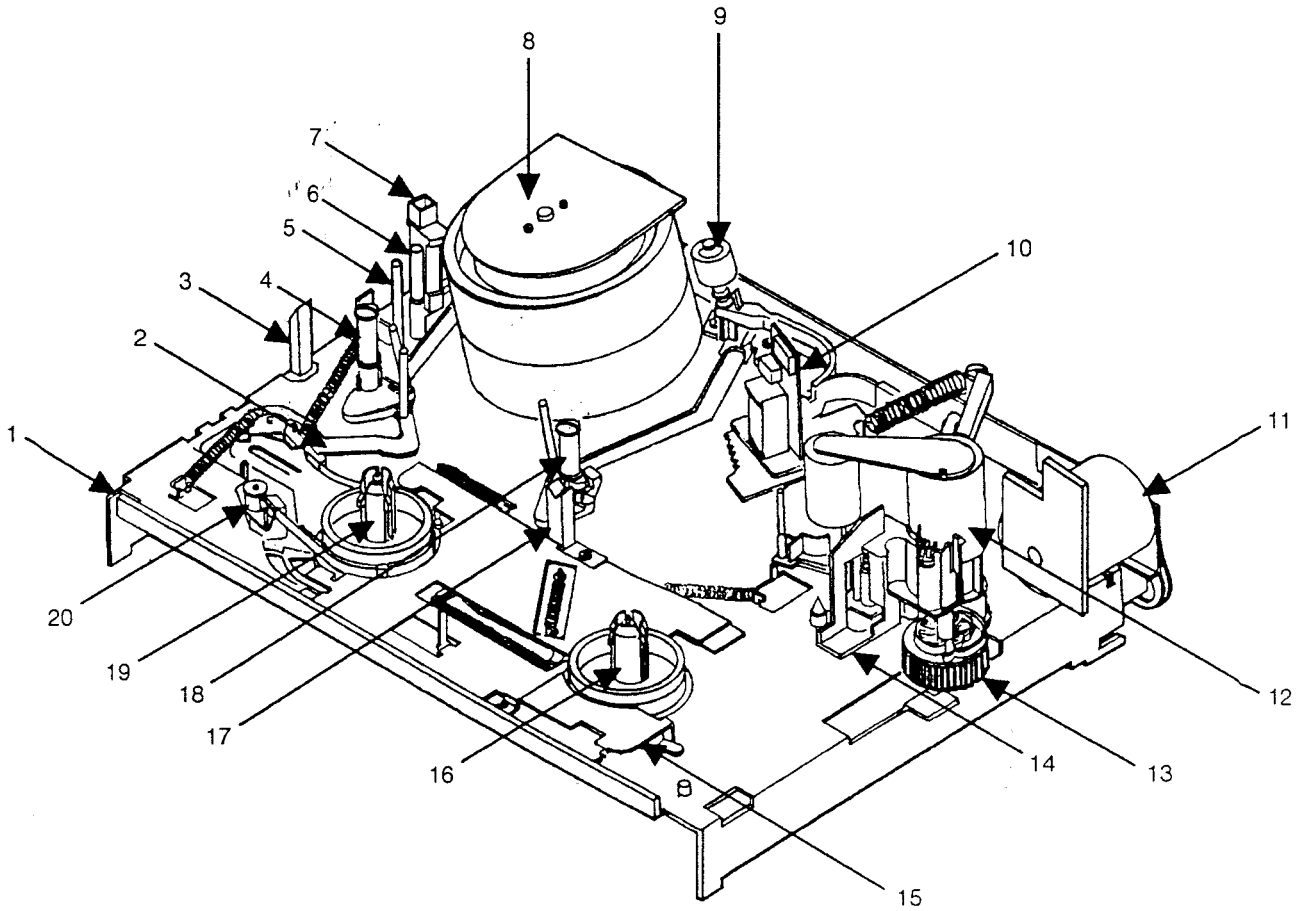
NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.



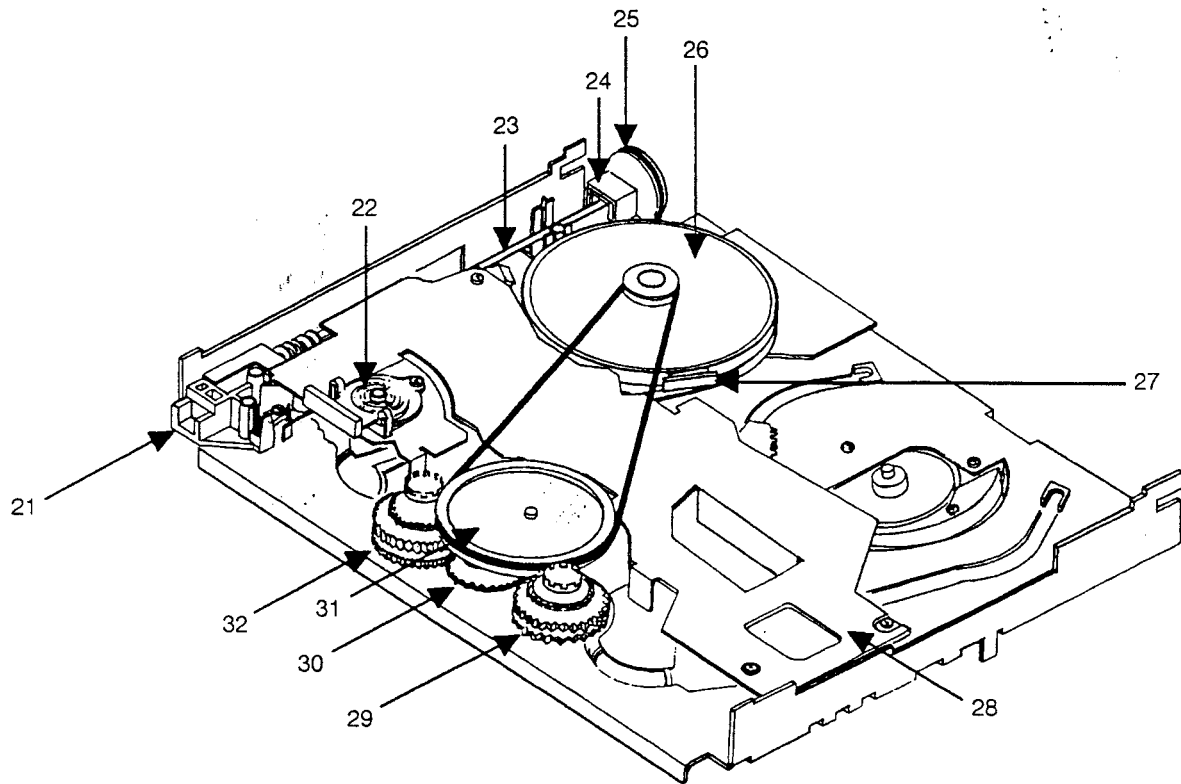
DECK PARTS LOCATIONS

(TOP VIEW)



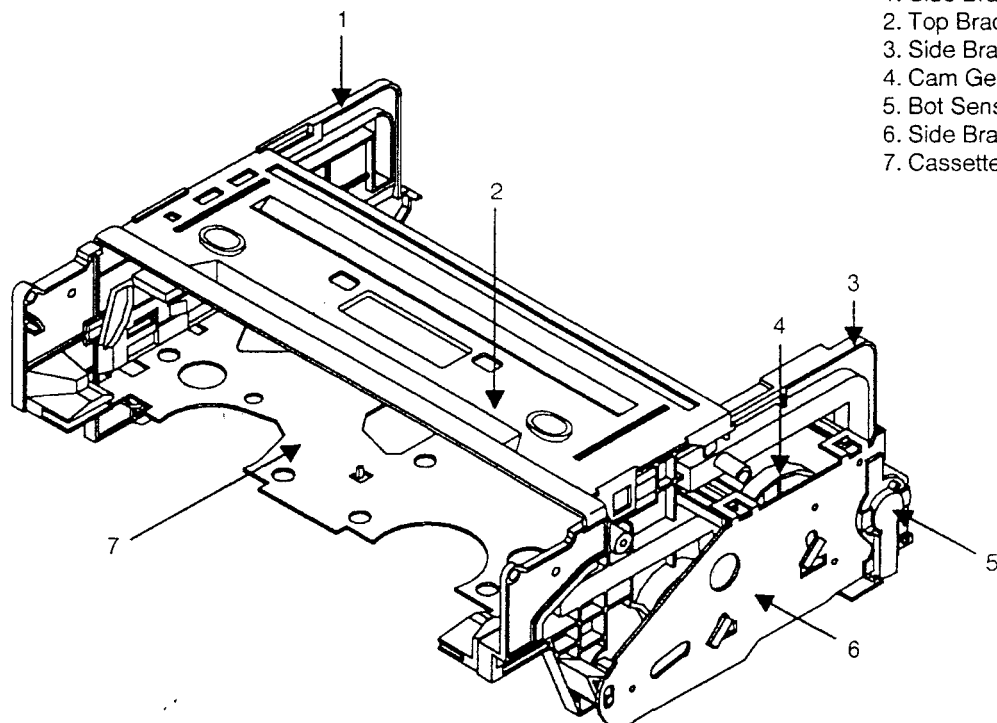
- | | |
|-------------------------|--------------------------|
| 1. Main Chassis | 11. Loading Motor Ass'y |
| 2. Tension Arm Ass'y | 12. Pinch Roller Block |
| 3. EOT Reflector | 13. Cam Gear |
| 4. Guide Roller S Ass'y | 14. Cassette Opener |
| 5. P0 Post | 15. Brake Bracket |
| 6. P1 Post | 16. Reel T |
| 7. FE Head | 17. LED Reflector |
| 8. Cylinder Unit | 18. Guide Roller T Ass'y |
| 9. Auto Head Cleaning | 19. Reel S |
| 10. Audio/Control Head | 20. Tension Band Ass'y |

DECK PARTS LOCATIONS (BOTTOM VIEW)



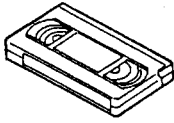
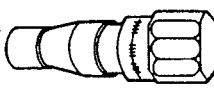
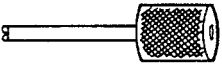
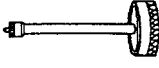
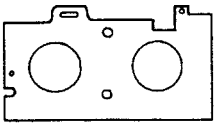
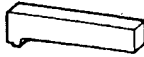
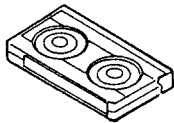
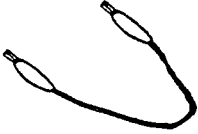
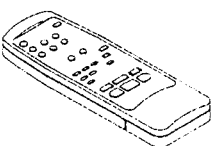
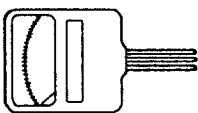
- | | |
|--------------------------|-------------------------|
| 21. Worm Bracket F Ass'y | 27. Capstan Brake Ass'y |
| 22. Mode Switch | 28. Bottom Plate |
| 23. Worm Ass'y | 29. Clutch Gear S Ass'y |
| 24. Worm Bracket R Ass'y | 30. Idler Arm Ass'y |
| 25. Loading Motor Belt | 31. Center Pulley |
| 26. Capstan DD Unit | 32. Clutch Gear T Ass'y |

(FRONT LOADING UNIT)



- | |
|--------------------------|
| 1. Side Bracket L |
| 2. Top Bracket Ass'y |
| 3. Side Bracket R Ass'y |
| 4. Cam Gear Assy |
| 5. Bot Sensor Cover |
| 6. Side Bracket R2 |
| 7. Cassette Holder Ass'y |

SERVICING FIXTURES AND TOOLS

VHS Alignment Tape JG001E (VP1S-LI6 ³) JG001F (VP1S-CO1 ³) 	JG002B Adapter JG002F Dial Torque Gauge (60~600gf·cm) JG002G (100~1200gf·cm) 	JG005 Post Adjustment Screwdriver Part No. SV-TG0-030-000 (small) 	JG153 X Value Adjustment Screwdriver 
JG022 Master Plane 	JG024 Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 	JG154 Cable 
JG155 Remote Control 	Tentelometer 		

Part No.	Remarks
JG001E	Monoscope, 6KHz
JG001F	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG154	Used to connect the test point of SERVICE and GROUND
JG155	Used to PG SHIFTER Adjustment

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Short circuit between **TP1010** and **TP1011** with the cable JG154.

(Refer to **MAJOR COMPONENTS LOCATION GUIDE**)

The EOT, BOT and Reel Sensor do not work at this moment.

At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.

TO CHECK INITIAL SETTING

NOTE: If there is an error in the data, the unit may indicate a malfunction.

INSTRUCTIONS

1. Turn on the POWER and press both FF key and CH UP key on the set simultaneously for more than 2 seconds.
The Initial Set Mode indicator will appear and the Address will blink. (Refer to Fig. 1)
2. Press the SET +/- button on the remote control to modify the address and check the data. (Refer to Table 1)
3. After checking, turn off the Power.

(If the wrong data is input)

4. Press the SET +/- button on the remote control to set to the address of the wrong data, then press the ENTER button.
The data will blink. (Refer to Fig. 1)
5. Press the SET +/- button on the remote control to set to the correct data, then press the ENTER button. (Refer to Table 1)
6. Repeat the above steps 4 and 5 and input the data into the each Address.
7. After the data input, turn off the Power.

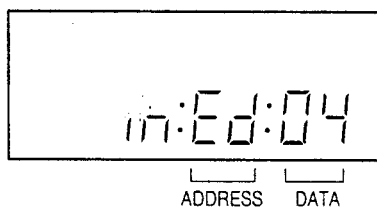


Fig. 1

ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
E2	02	EC	B1	F6	47
E3	86	ED	1B	F7	55
E4	85	EE	13	F8	B2
E5	00	EF	00	F9	FF
E6	06	F0	10	FA	3A
E7	22	F1	EA	FB	0A
E8	AA	F2	CE		
E9	45	F3	5D		
EA	02	F4	00		
EB	40	F5	00		

Table 1

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

- Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Front Loading Unit. (Do not place an object which weighs over 500g.)
- When you activate the deck without the Front Loading Unit, short circuit between **TP1010** and **TP1011**. In this condition the BOT/EOT/Reel Sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (**JG022**) and reel disk height adjustment jig (**JG024**) on mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig (**JG024**) on the master plane and higher than "B" as shown in **Fig. 1-1-B**. If it is not, adjust to less than $7.5\text{mm} \pm 0.2\text{mm}$ with the height adjustment washer.
4. Perform the same adjustment for other reel.

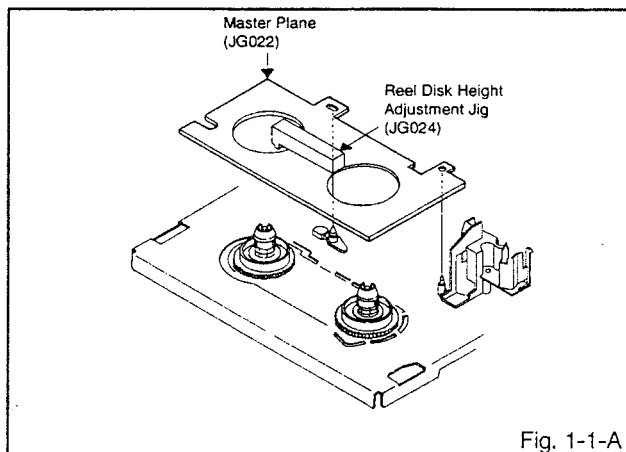


Fig. 1-1-A

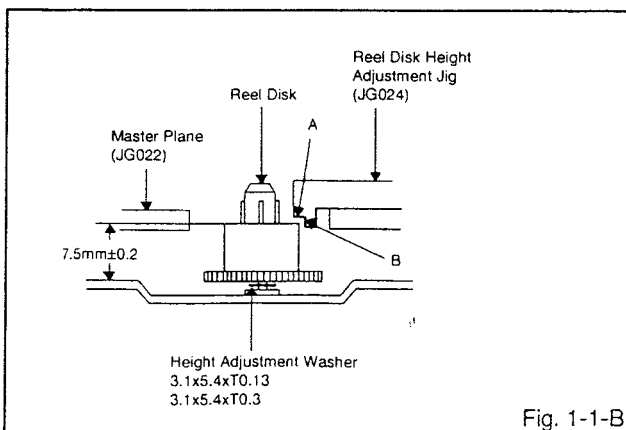


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension so that the Tension Post is at the position of $0.3\text{mm} \sim 0.5\text{mm}$ from the Rib. (Refer to **Fig. 1-2**)
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

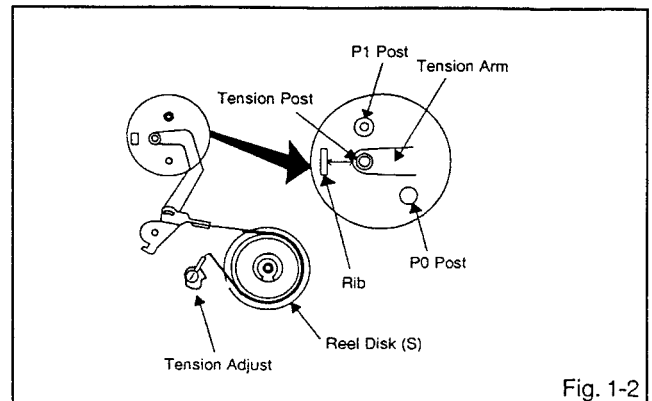


Fig. 1-2

1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
 2. Install the tentelometer as shown in **Fig. 1-3**. Confirm the value is within $18 \sim 24\text{gf}$ at this time.
- IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.
1. After adjustment, confirm and adjust the tension post position (Refer to item 1-2) for the tension arm, install the cassette type torque tape (**JG100A**) and set to the PLAY mode.
 2. Confirm that the left hand side tension value of the torque tape is $20 \sim 35\text{gf} \cdot \text{cm}$ for the standard mode tape.

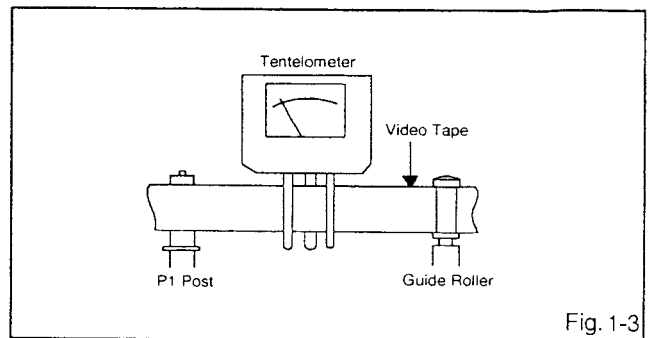


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge (**JG002G**) on take-up reel disk, and place unit in FAST FORWARD mode. (Refer to Fig. 1-4)
2. Confirm that torque is more than 400gf·cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (**JG002G**) on supply reel disk, and place the unit in REWIND mode. (Refer to Fig. 1-4).
3. Confirm that torque is more than 400gf·cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) (Refer to Fig. 1-4)

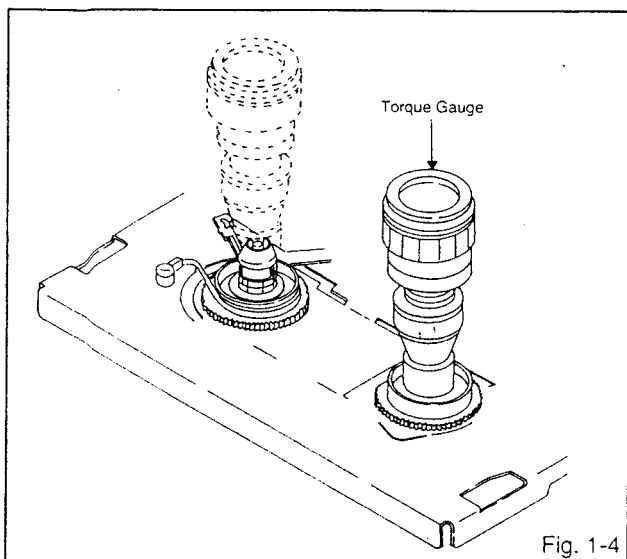
1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gf·cm at that time.

(Supply Reel Brake) (Refer to Fig. 1-4)

1. Set to STOP mode.
2. Set the torque gauge (**JG002G**) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gf·cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.



NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

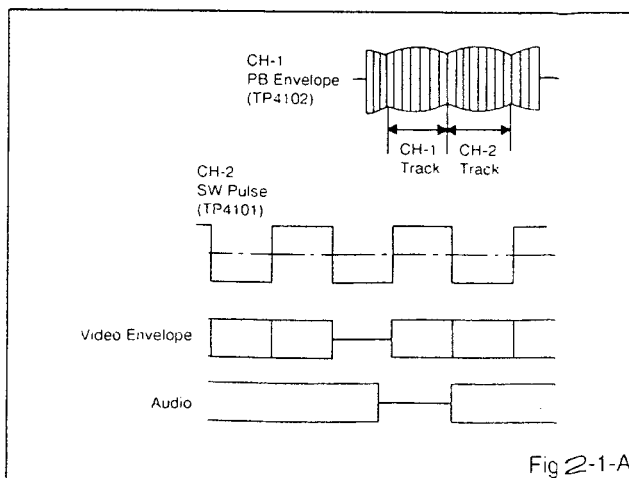
Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to **TP4102 (PB Envelope)** and CH-2 to **TP4101 (SW Pulse)**.
2. Set the tracking to manual center position in the following way. Press and hold the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. (Refer to Fig. 2-1-A)
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver **JG005**).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. (Refer to Fig. 2-1-B)
6. Adjust the PG shifter (**ELECTRICAL ADJUSTMENTS : ITEM 3-1**) in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. (Refer to item 2-2)



MECHANICAL ADJUSTMENTS

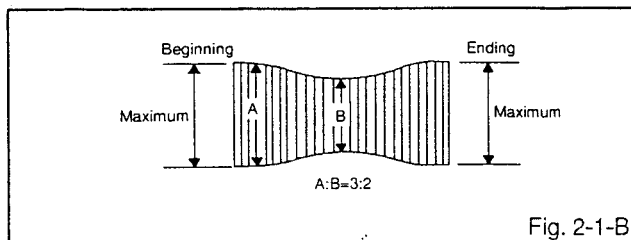


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. (Refer to Fig. 2-2)

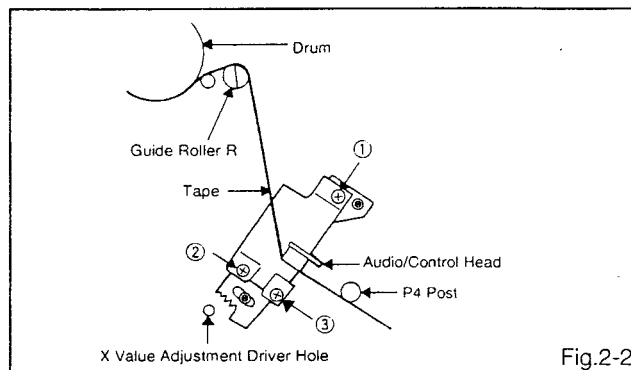


Fig. 2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape (JG001E) and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. (Refer to Fig. 2-2)
3. Adjust the screw ③, (Refer to Fig. 2-2) until the height of the A/C head reaches the position against the tape as shown in Fig. 2-3.
4. When the control head height is not correct. (When you must turn the screw more than 45 degrees), Turn all of the screws ①, ② and ③ to the same degrees. Then confirm the angle of the audio/control head and adjust again.

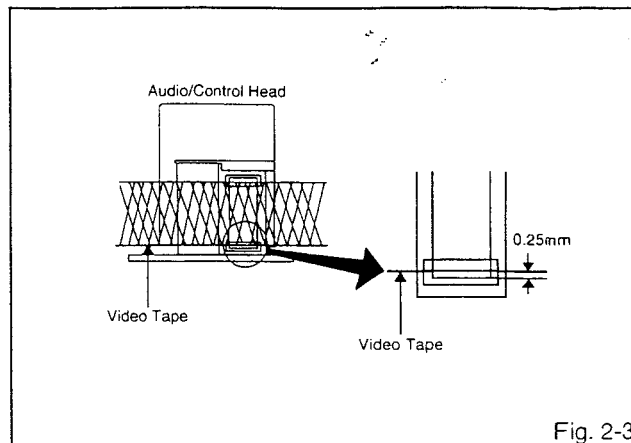


Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk.
(Refer to item 1-1)
2. Confirm and adjust tension post position.
(Refer to item 1-2)
3. Adjust the guide roller.
(Refer to item 2-1)
4. Adjust the A/C head tilt.
(Refer to item 2-2)
5. Adjust the A/C head height and azimuth.
(Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to TP4101 and CH-2 to TP4102. Playback the VHS alignment tape (JG001E). Set the tracking to manual center. Adjust X with the screw driver for X (JG153) as the Fig. 2-1-A and Fig. 2-1-B.
(Refer to No. 2 of the item 2-1).

ELECTRICAL ADJUSTMENTS

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease (YG6260M).
(To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK

Input Signal-Alignment Tape (JG001E)

INSTRUCTIONS

1. Playback the alignment tape. (JG001E)
2. Press the PLAY button on the set for more than 3 seconds.
If the indicator ATR disappears, the adjustment is finished.

(If the above adjustments doesn't work well:)

1. Connect CH-1 on the oscilloscope to TP4101 and CH-2 to Pin 19 of J4501.
2. Playback the alignment tape. (JG001E)
3. Press the PG AUTO key. (JG155)
4. While the ATR indicator is flashing, press the PG MANUAL key. (JG155)
5. Adjust the Tracking +/- key until waveform of the oscilloscope measures $6.5 \pm 0.5(H)$ at both leading and trailing edges. (Refer to Fig. 3-1-A, B)
6. Press the Tracking Auto key.

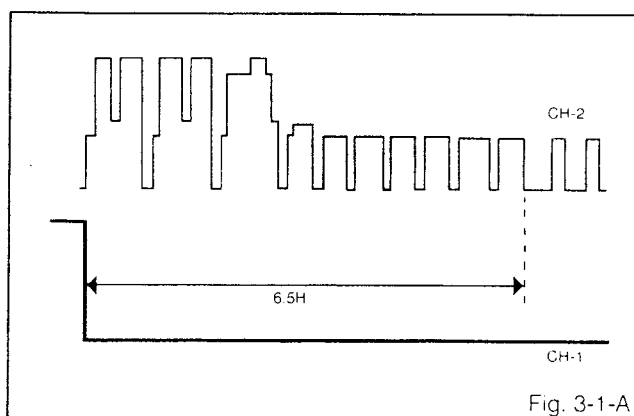


Fig. 3-1-A

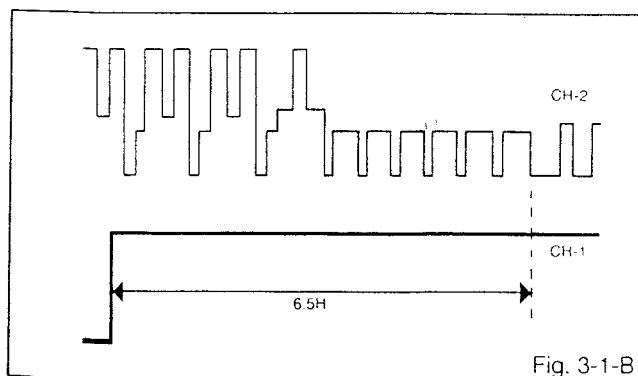


Fig. 3-1-B

3-2: PILOT

CONDITIONS

MODE-TUNER

AUDIO OUTPUT SW : STEREO POSITION

Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: 3KHz, R ch: 1KHz).
2. Connect the oscilloscope to TP6603.
3. Adjust L6604 until the waveform becomes as shown in Fig. 3-2.

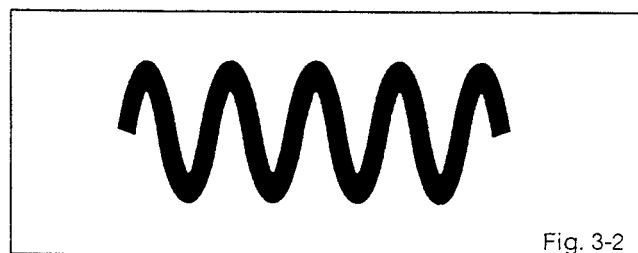


Fig. 3-2

3-3: SEPARATION

CONDITIONS

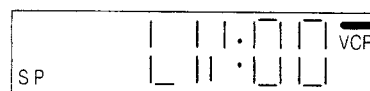
MODE-STOP

AUDIO OUTPUT SW : STEREO POSITION

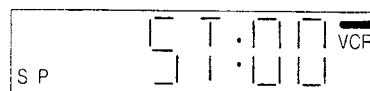
Input Signal-RF Signal

INSTRUCTIONS

1. Receive the audio signal (L ch: No Signal, R ch: 1 KHz).
2. Connect the AC voltmeter to AUDIO OUT (L ch).
3. Press the PLAY button on the set for more than 2 seconds.
The fluorescent display on the set displays as below.

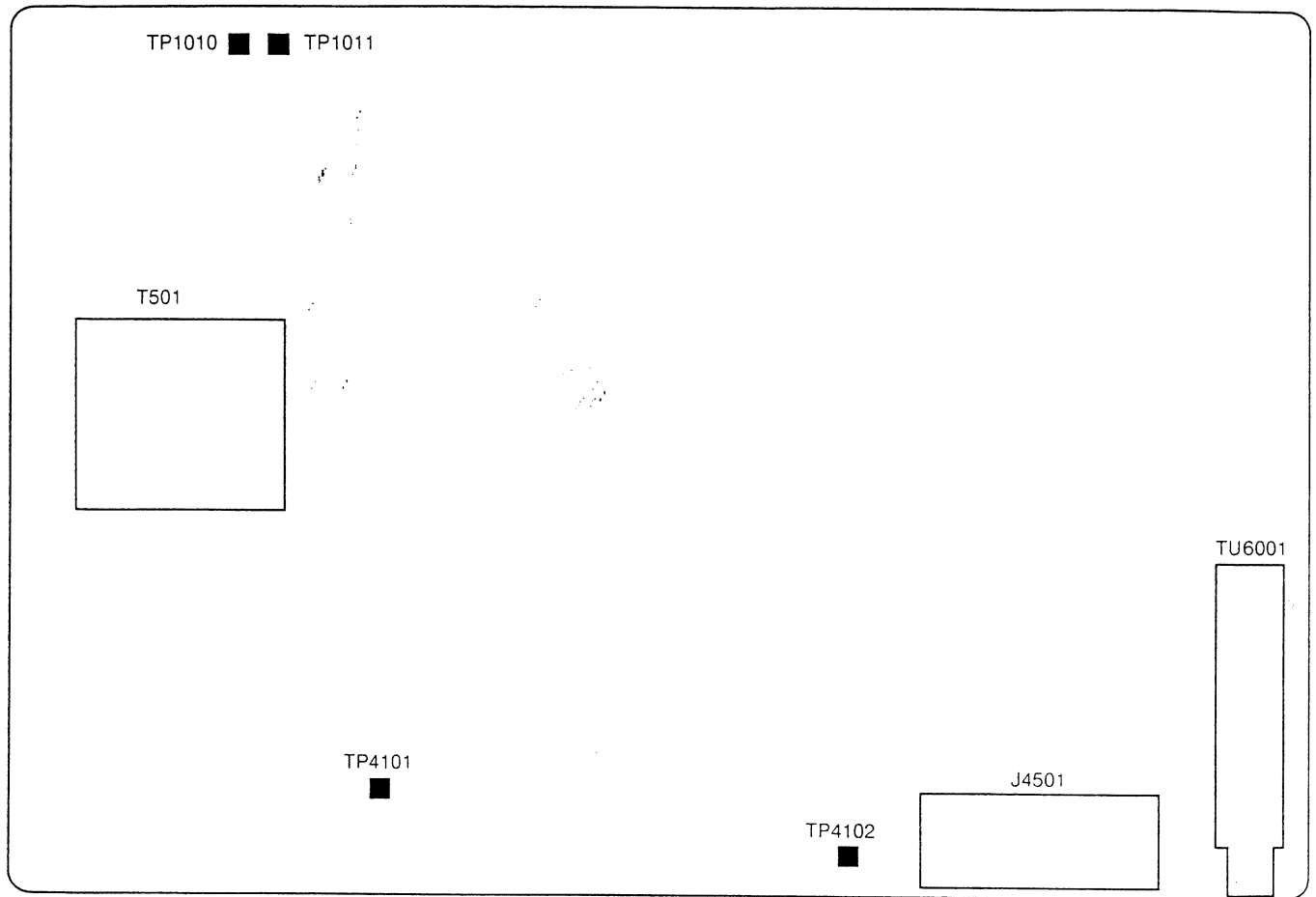


4. Press the PLAY button on the set for more than 2 seconds.
The fluorescent display on the set displays as below.

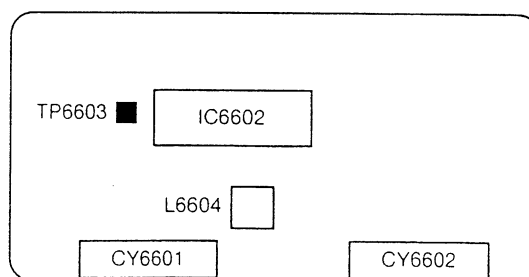


5. Adjust the F.FWD and REW button on the remote control until output signal is minimum. (more than 30dB)
6. Press the PLAY button on the set for more than 2 seconds to complete the adjustment.
7. Receive the audio signal (L ch: 1KHz, R ch: No Signal).
8. Connect the AC voltmeter to AUDIO OUT (R ch).
9. Repeat steps 3 ~ 6.

MAJOR COMPONENTS LOCATION GUIDE

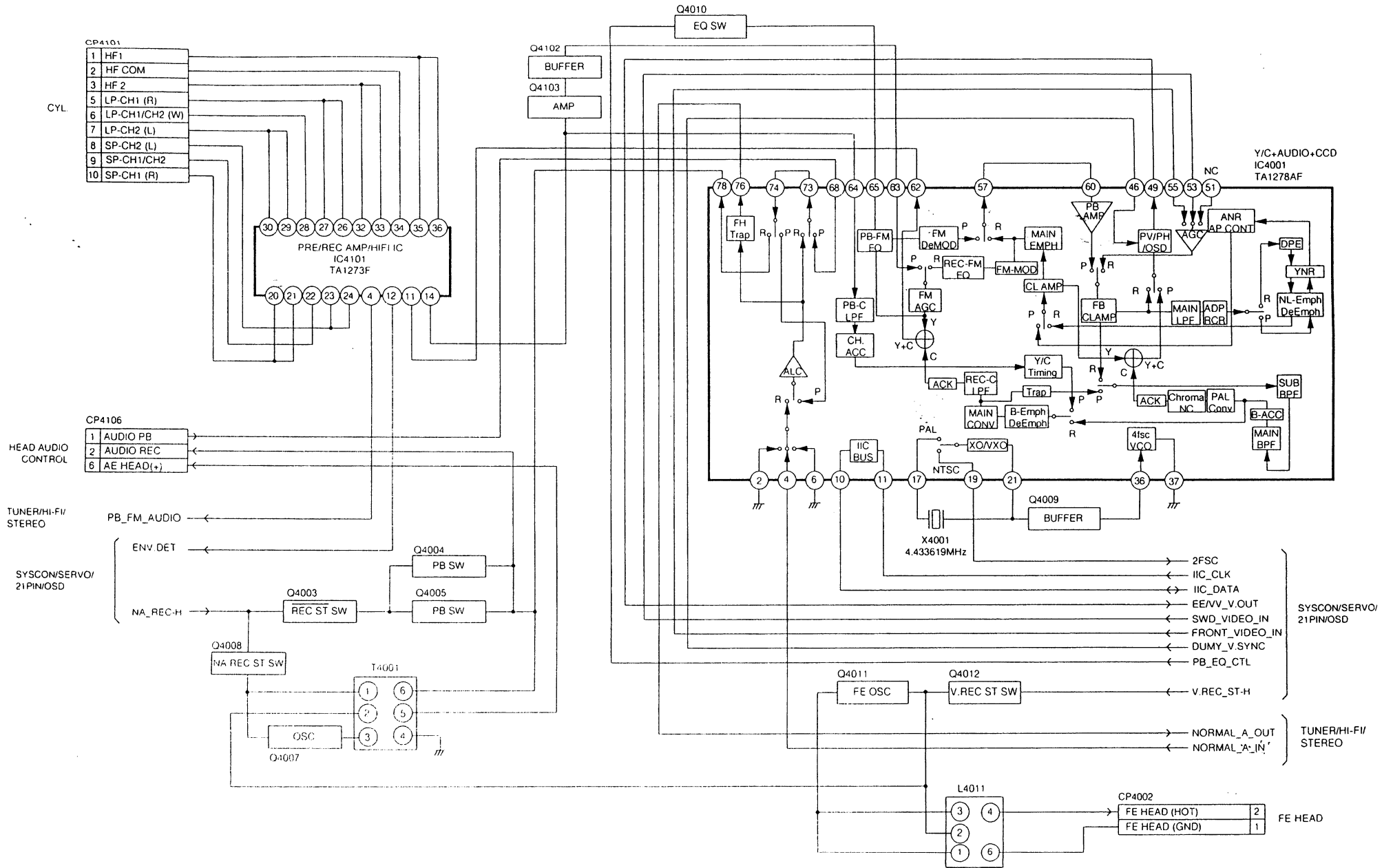


SYSCON

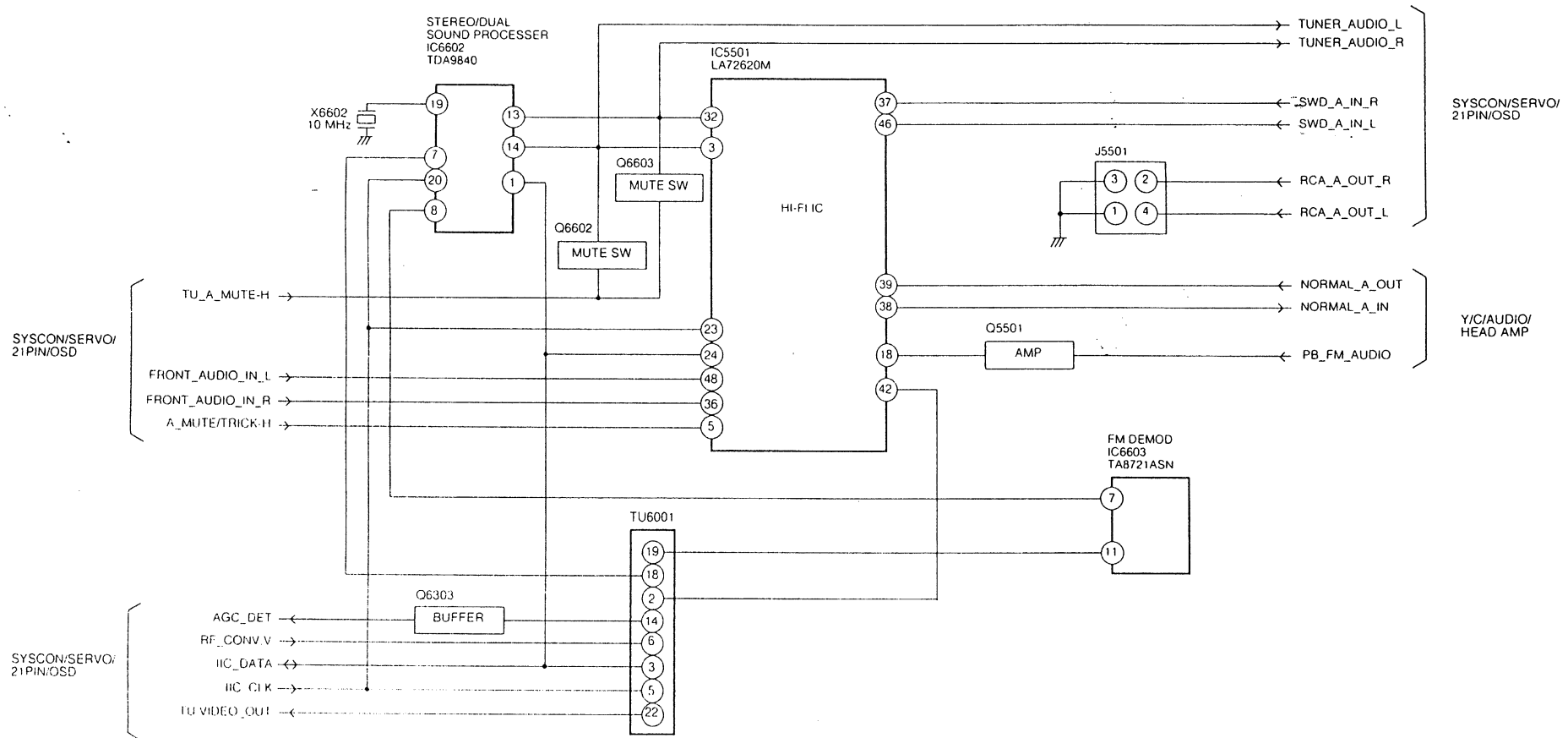


STEREO

Y/C/AUDIO/HEAD AMP BLOCK DIAGRAM

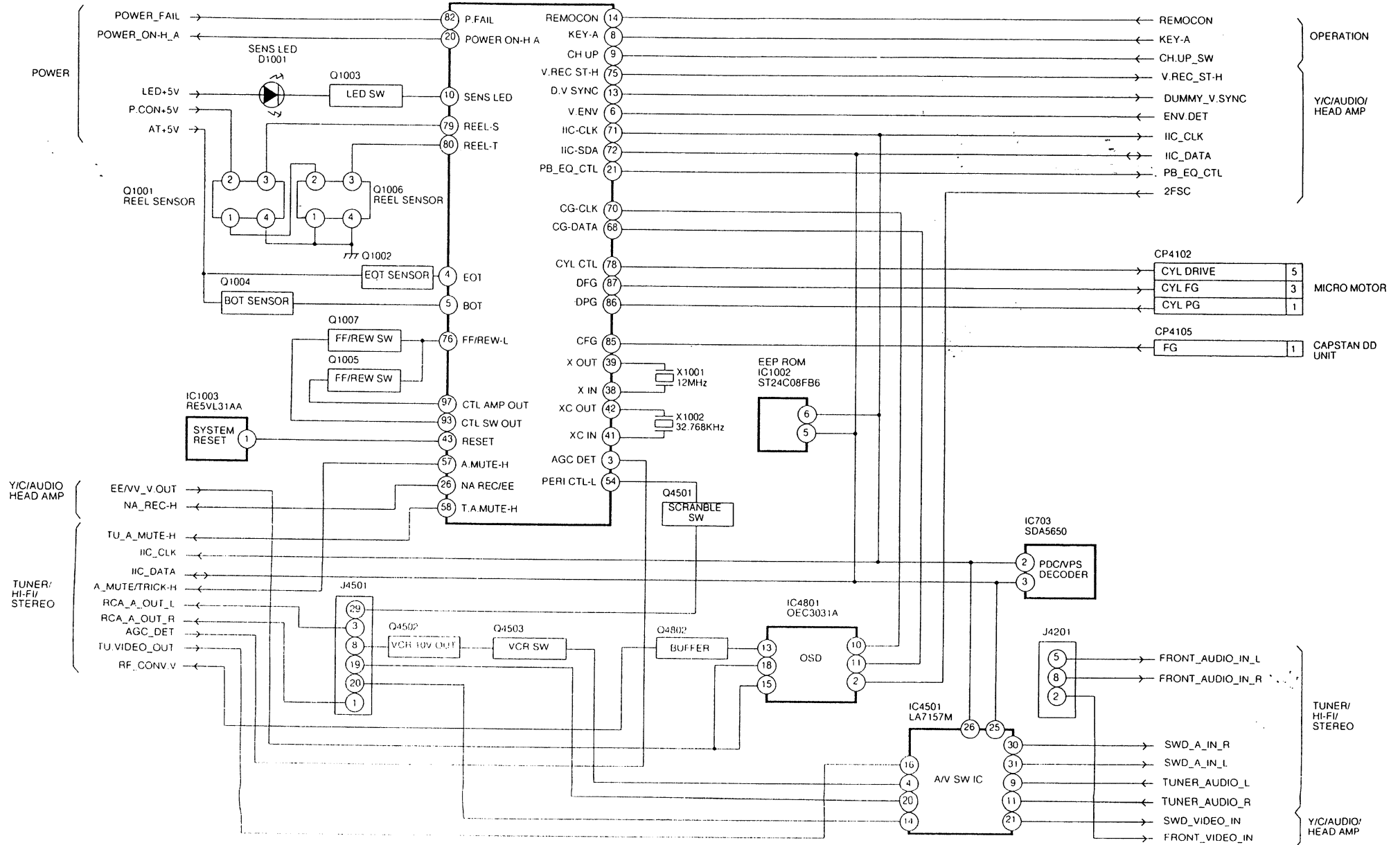


TUNER/HI-FI/STEREO BLOCK DIAGRAM

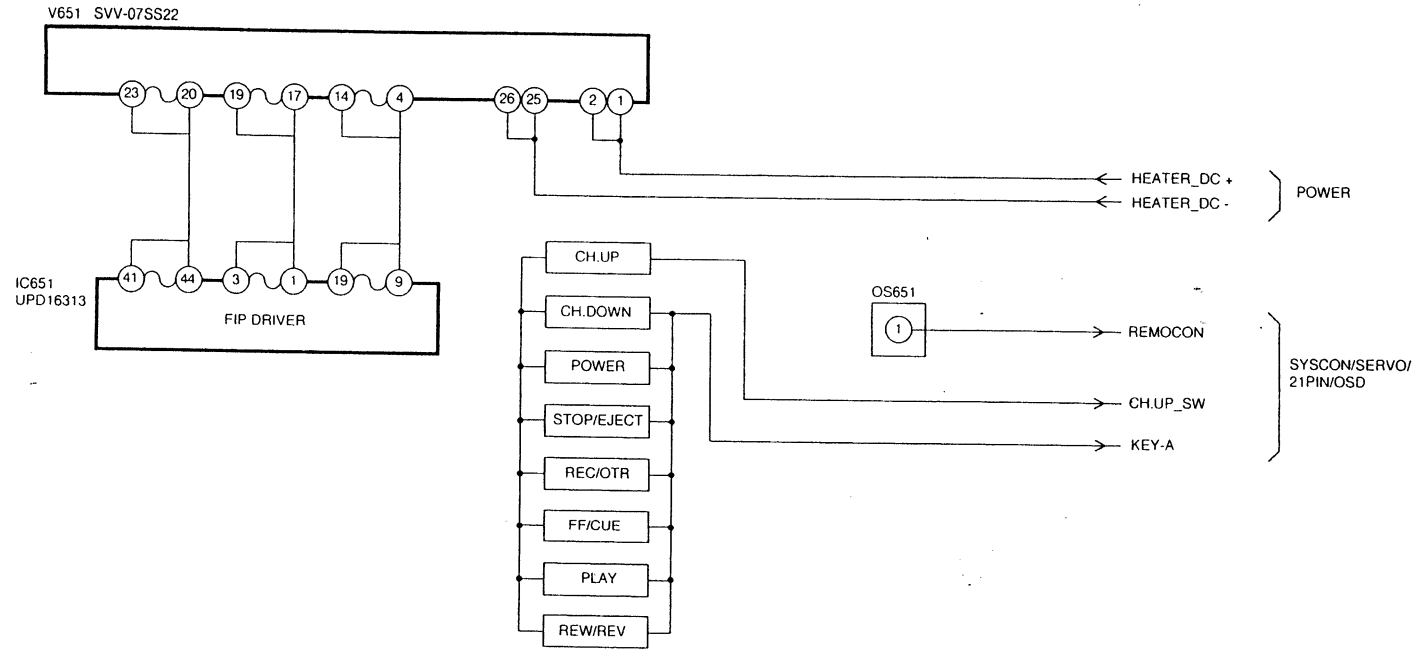


SYSTEM CONTROL/SERVO/21PIN/OSD BLOCK DIAGRAM

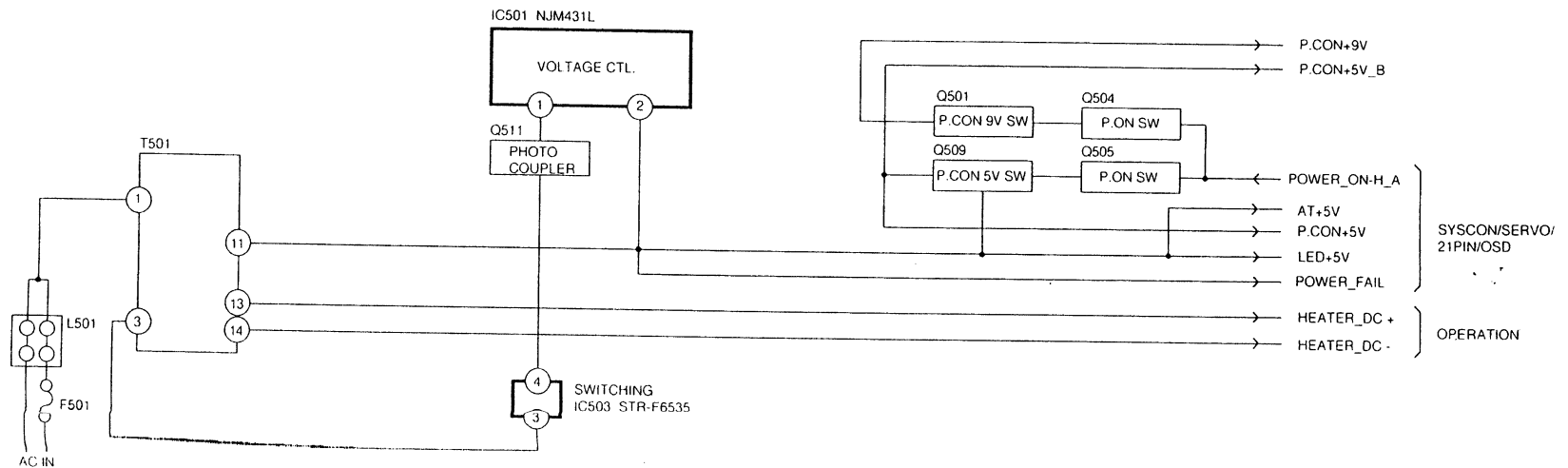
SYSCON TIMER SERVO
IC1001
OEC7031A



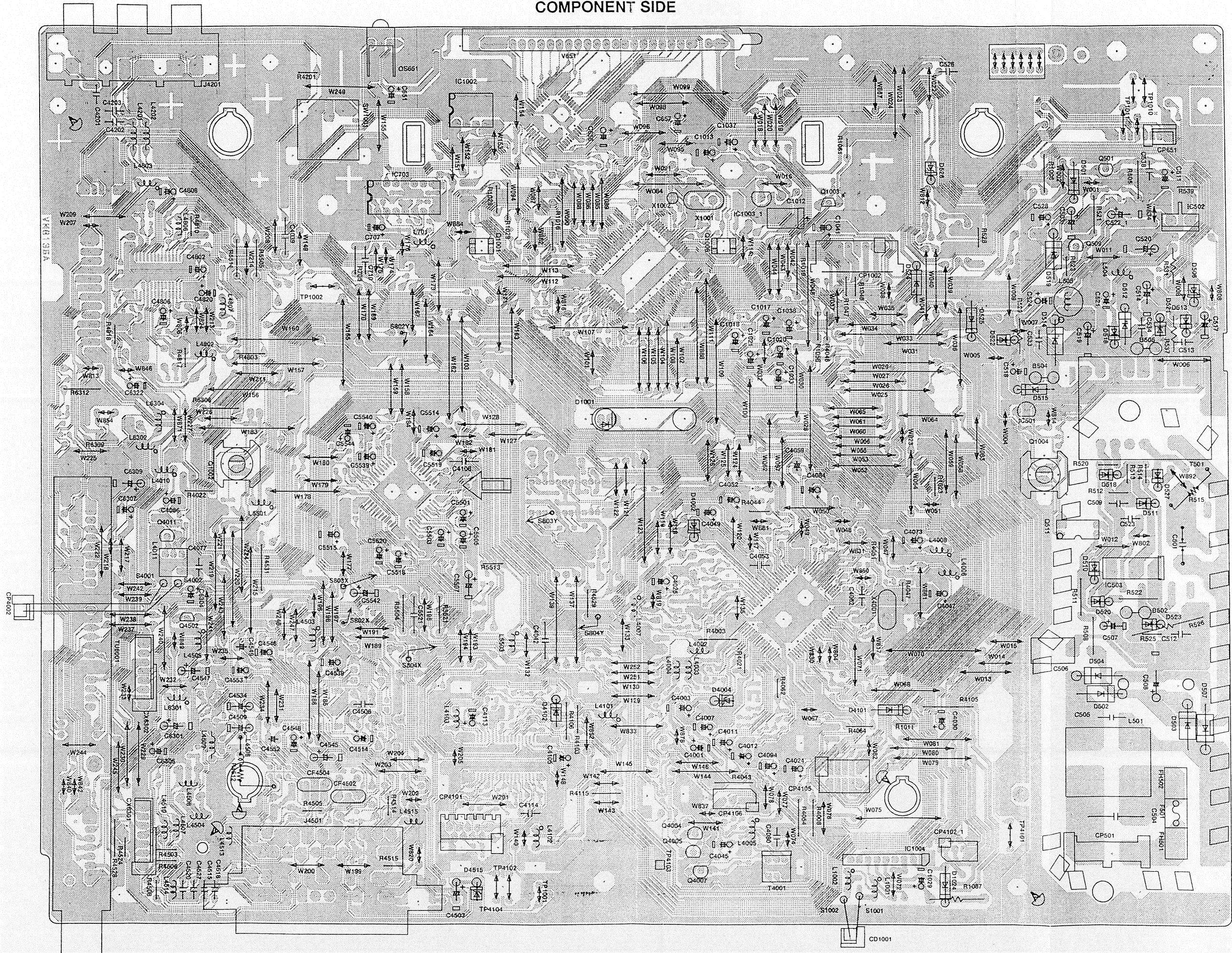
OPERATION BLOCK DIAGRAM



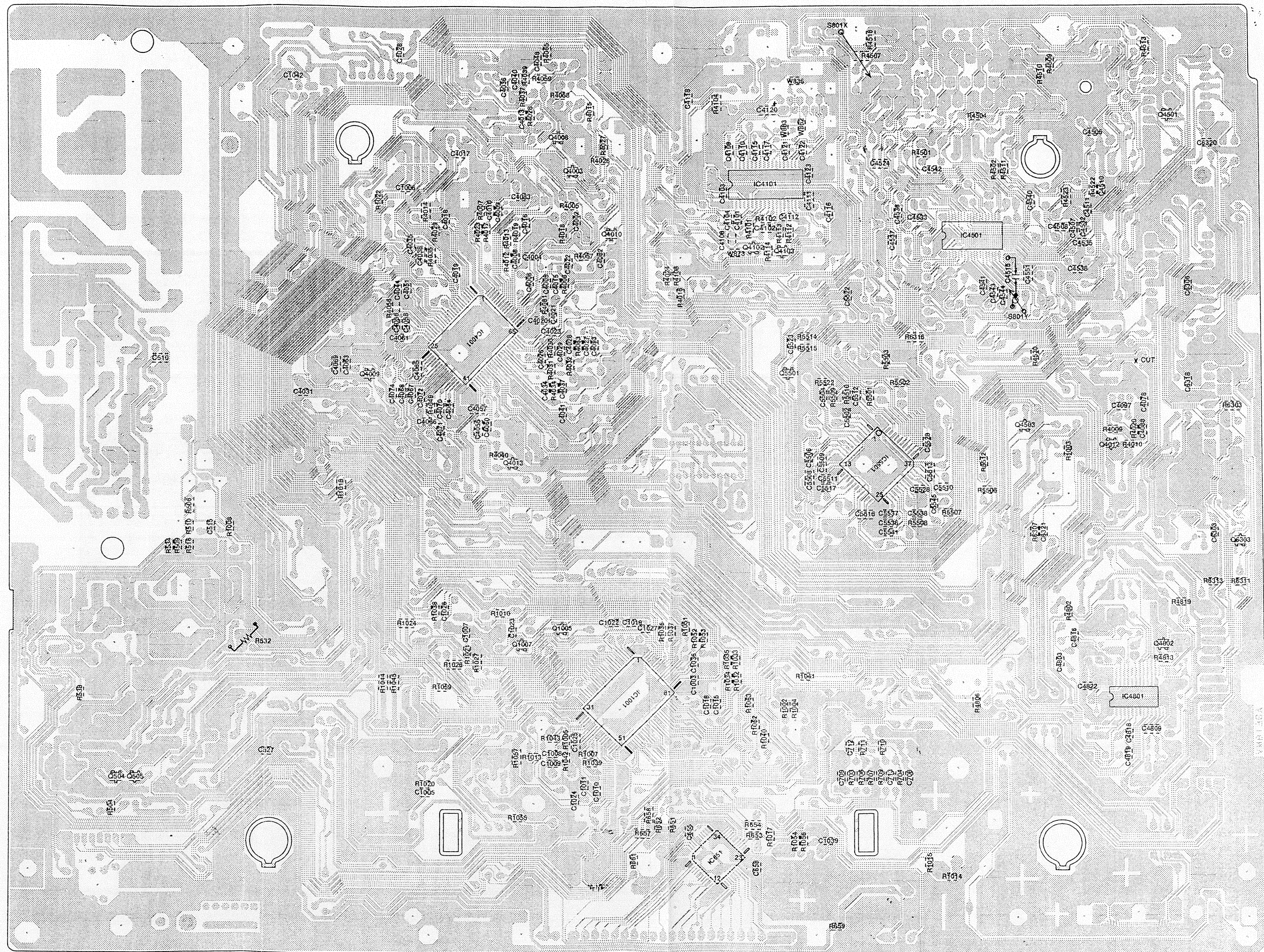
POWER BLOCK DIAGRAM



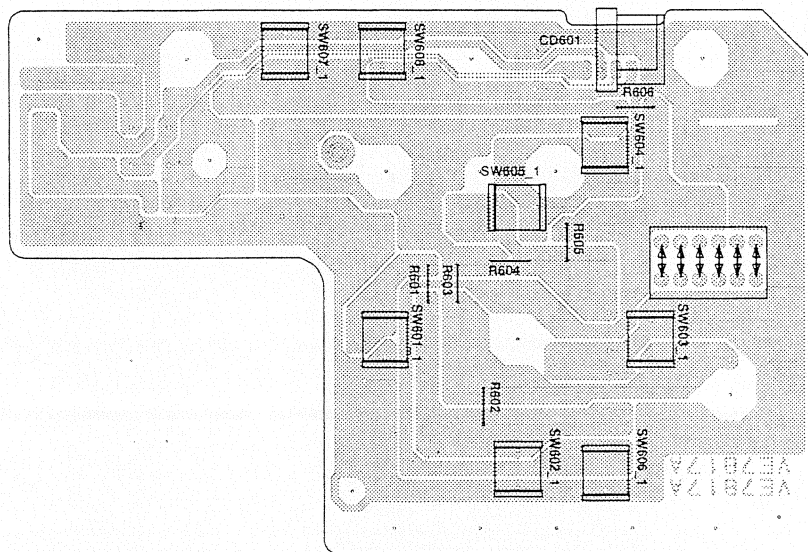
PRINTED CIRCUIT BOARDS
SYSCON
COMPONENT SIDE



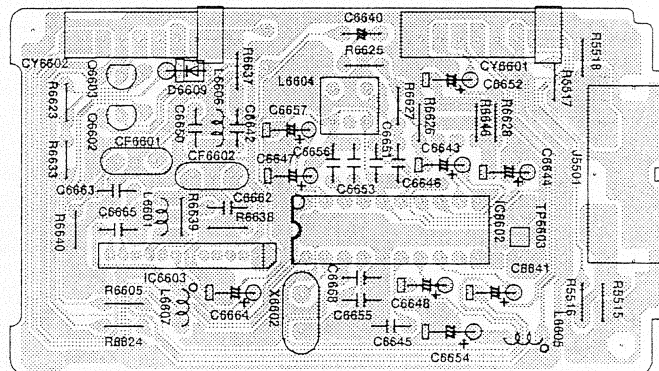
PRINTED CIRCUIT BOARDS
SYSCON
SOLDER SIDE



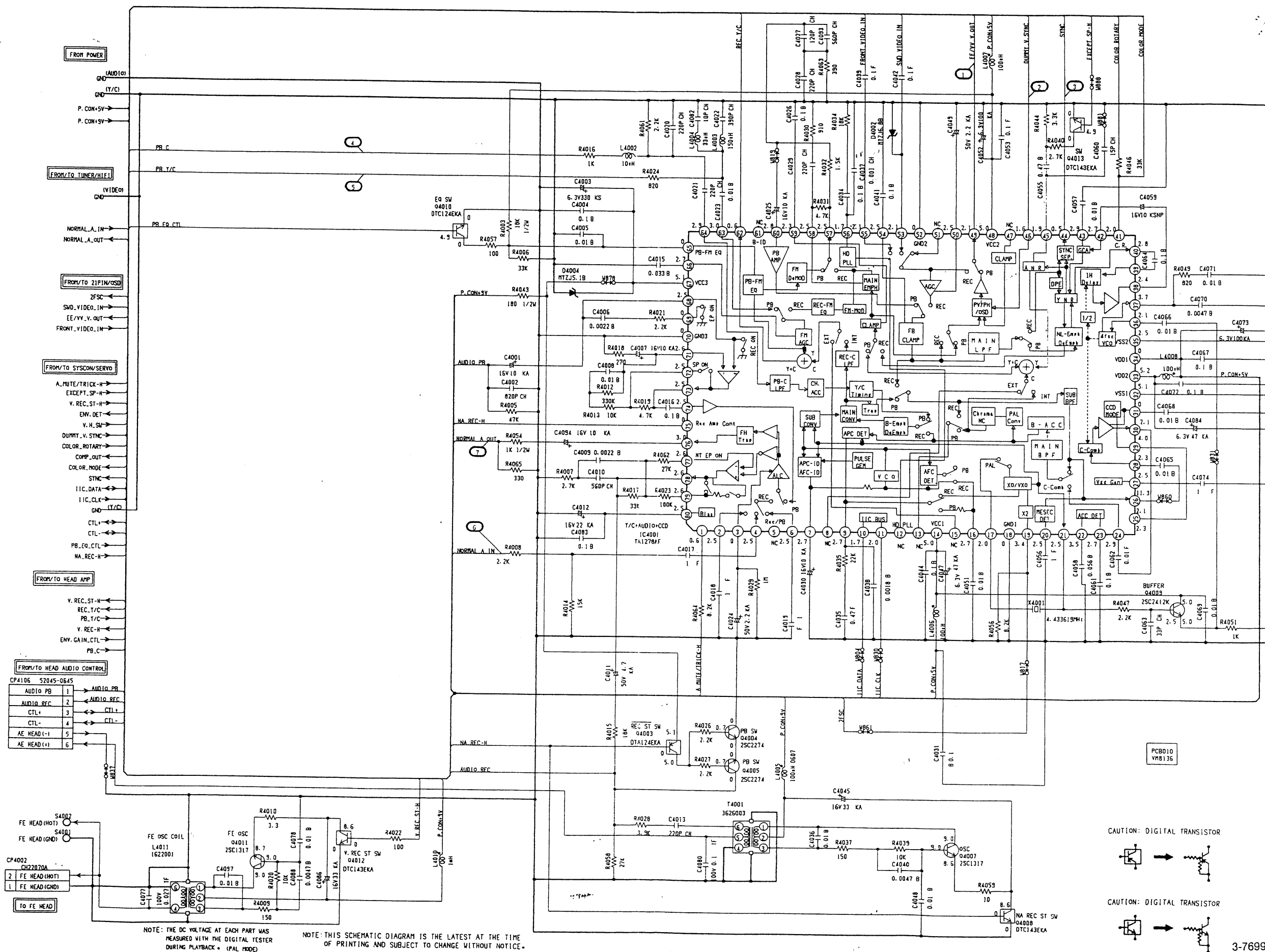
PRINTED CIRCUIT BOARDS OPERATION



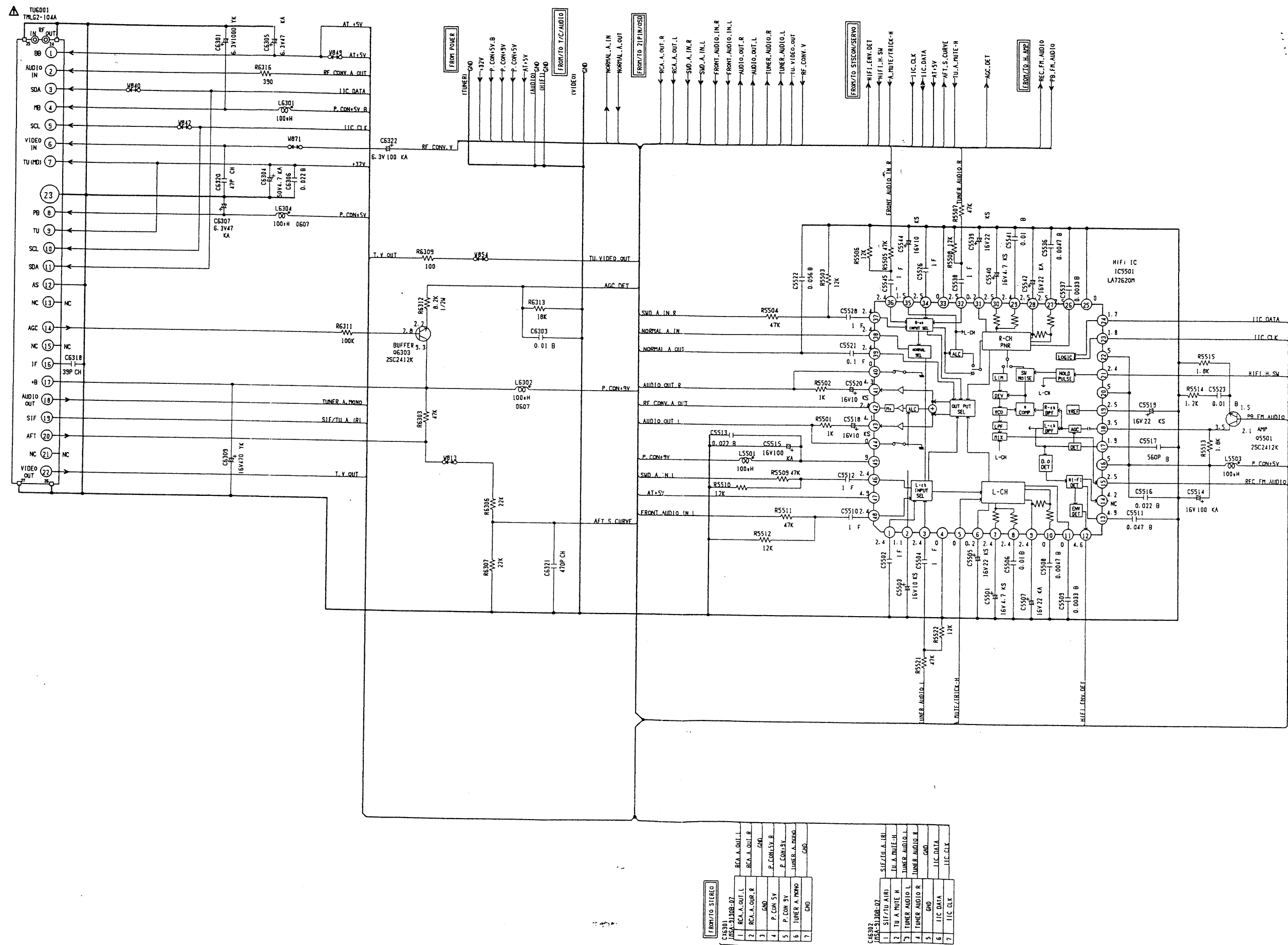
STEREO



Y/C/AUDIO SCHEMATIC DIAGRAM



TUNER/HI-FI SCHEMATIC DIAGRAM



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

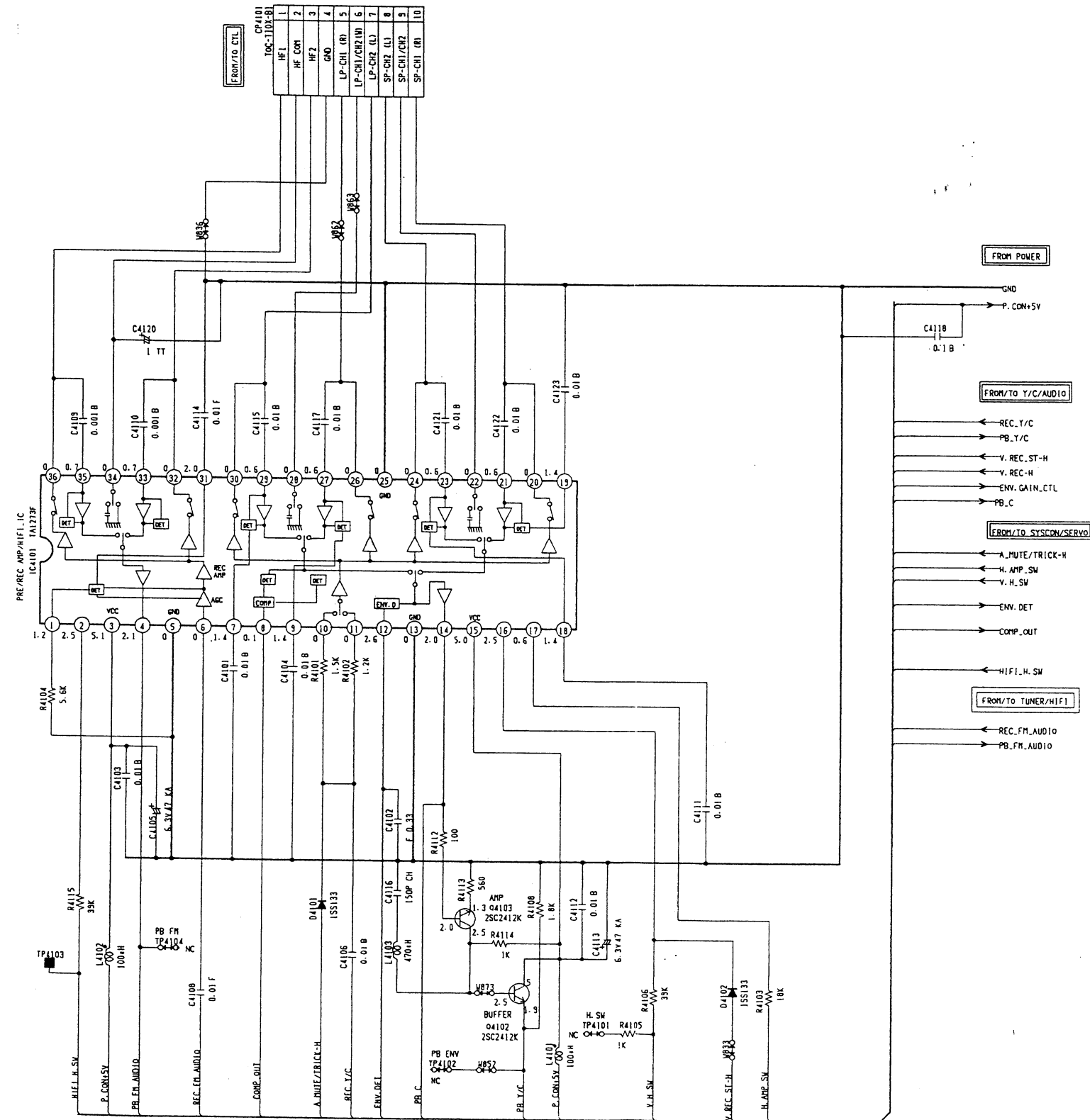
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIECES REPAREES PAR UN ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB010
VMB136

HEAD AMP SCHEMATIC DIAGRAM

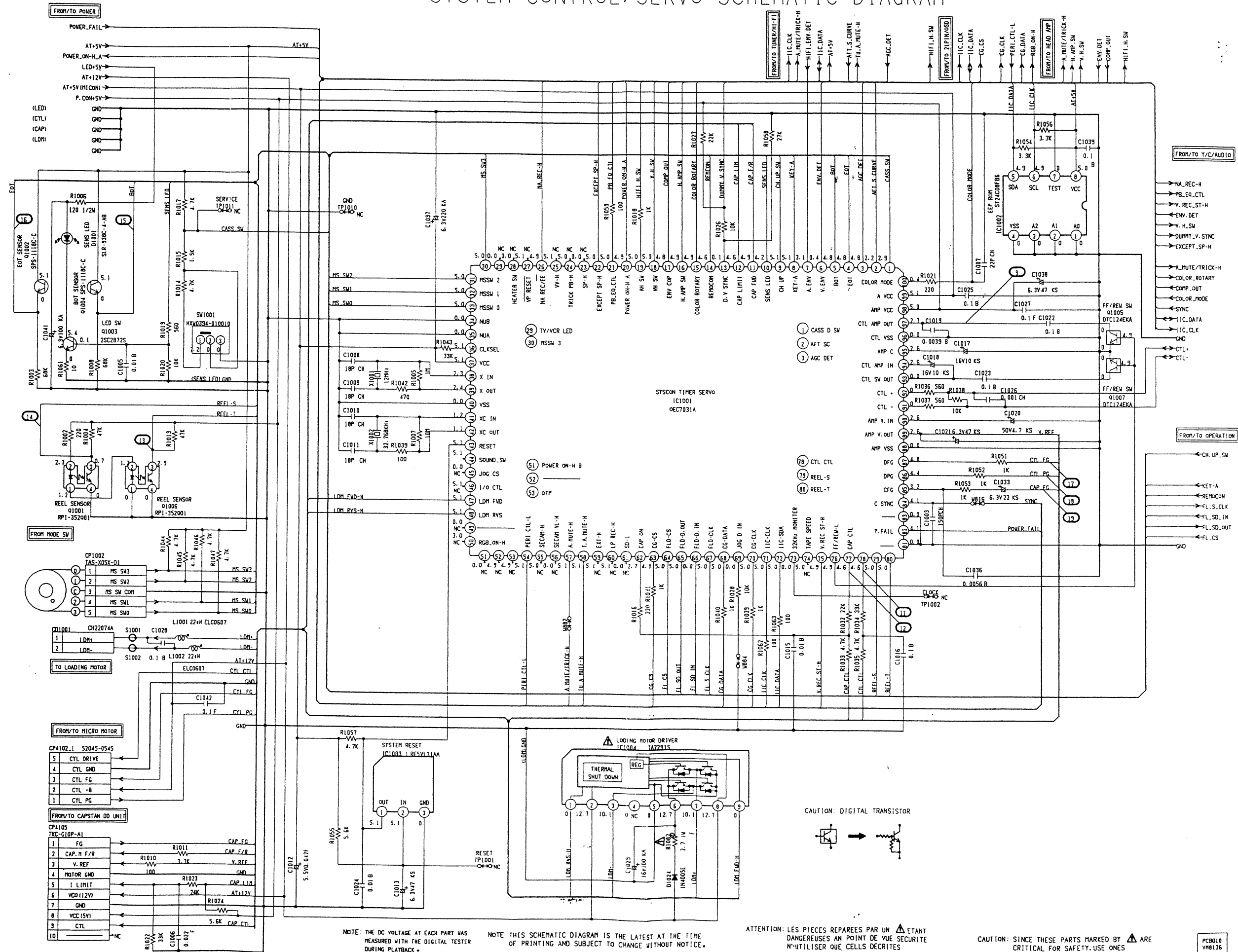


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB010
V08136

3-7705

SYSTEM CONTROL/SERVO SCHEMATIC DIAGRAM

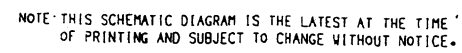


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

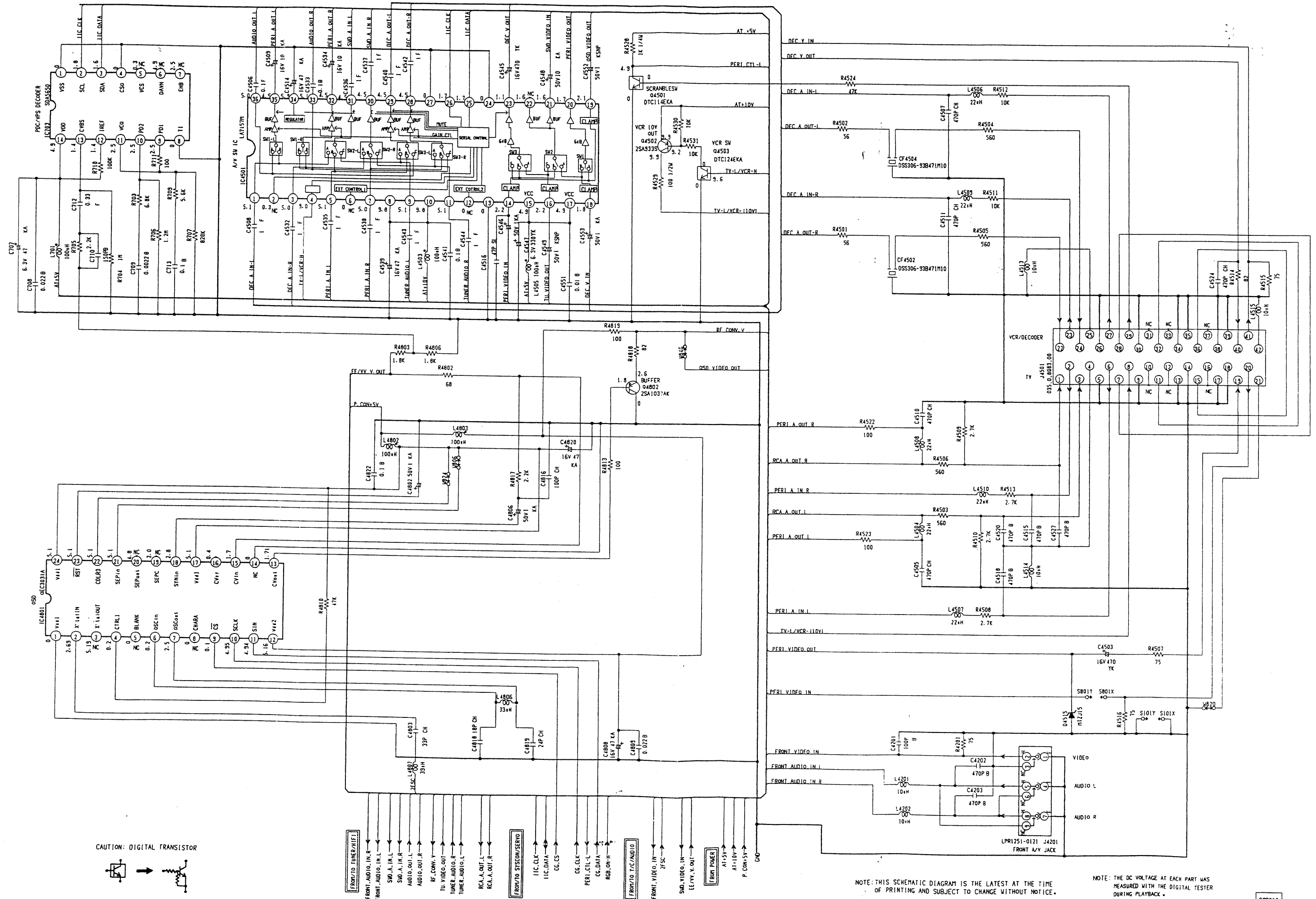
ATTENTION: LES PIÈCES RÉPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

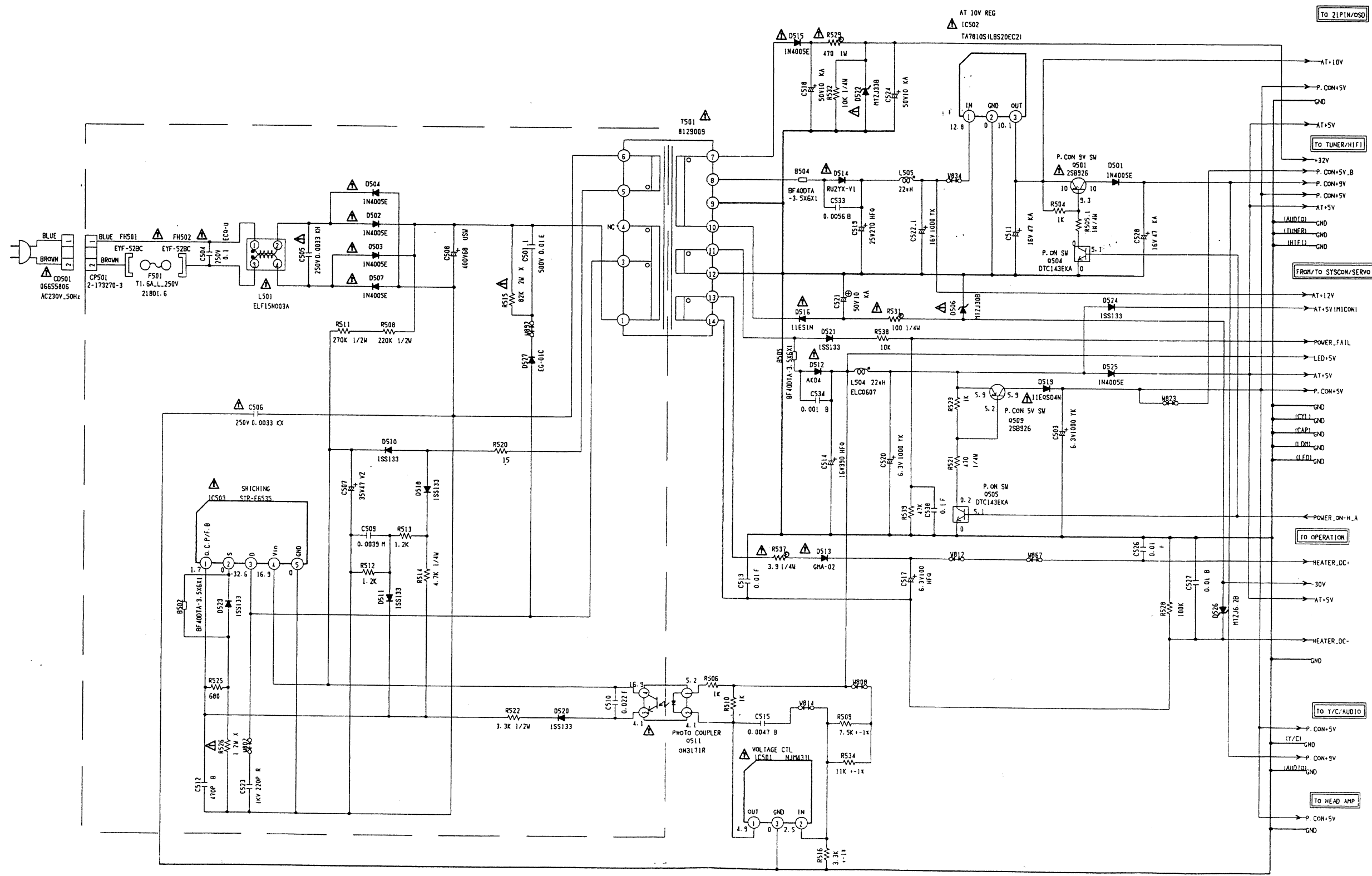


3-7706

21PIN/OSD SCHEMATIC DIAGRAM



POWER SCHEMATIC DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÉCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIÉCES.

NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

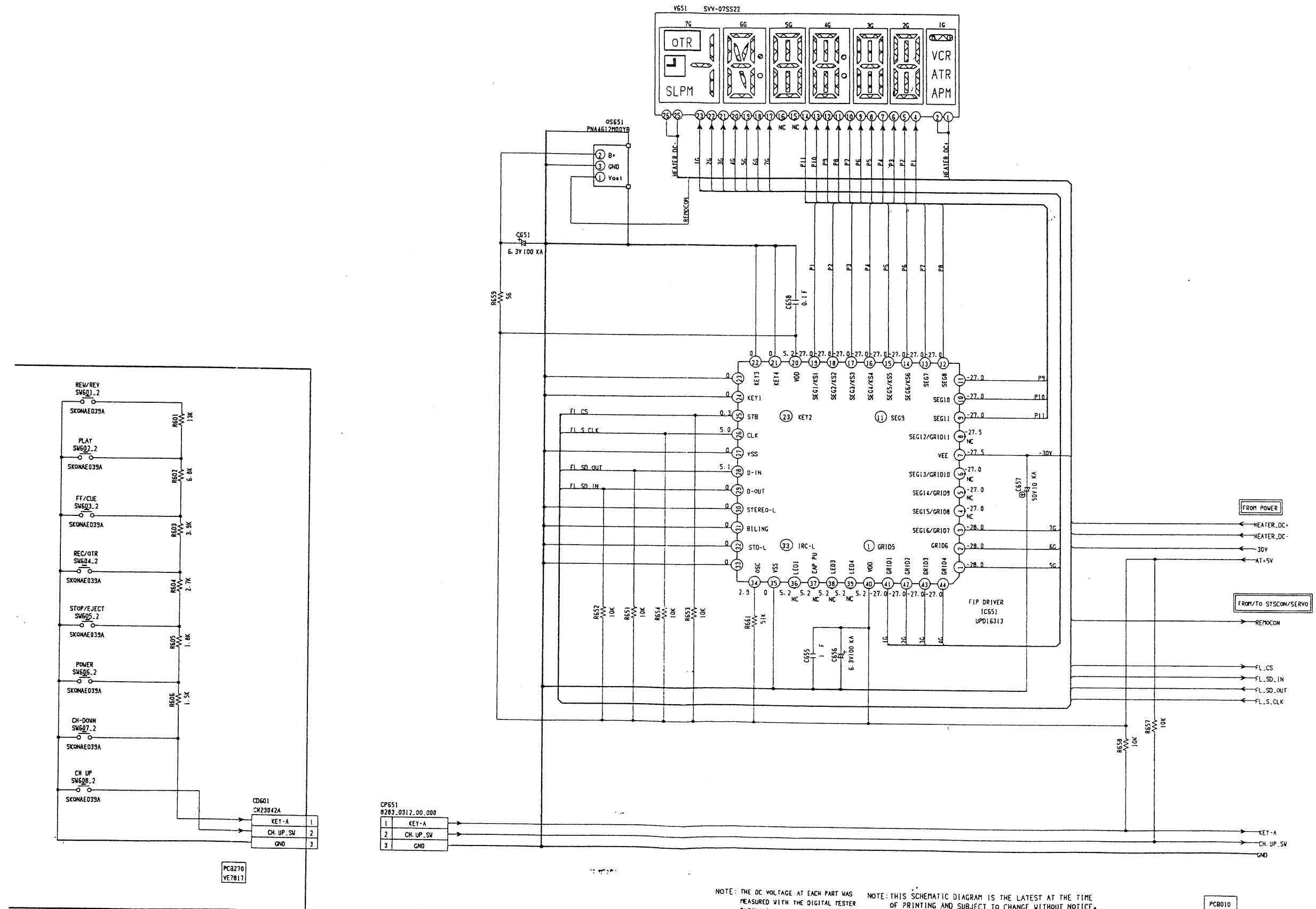
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: DIGITAL TRANSISTOR

PCB010
V08136

3-7701

OPERATION SCHEMATIC DIAGRAM

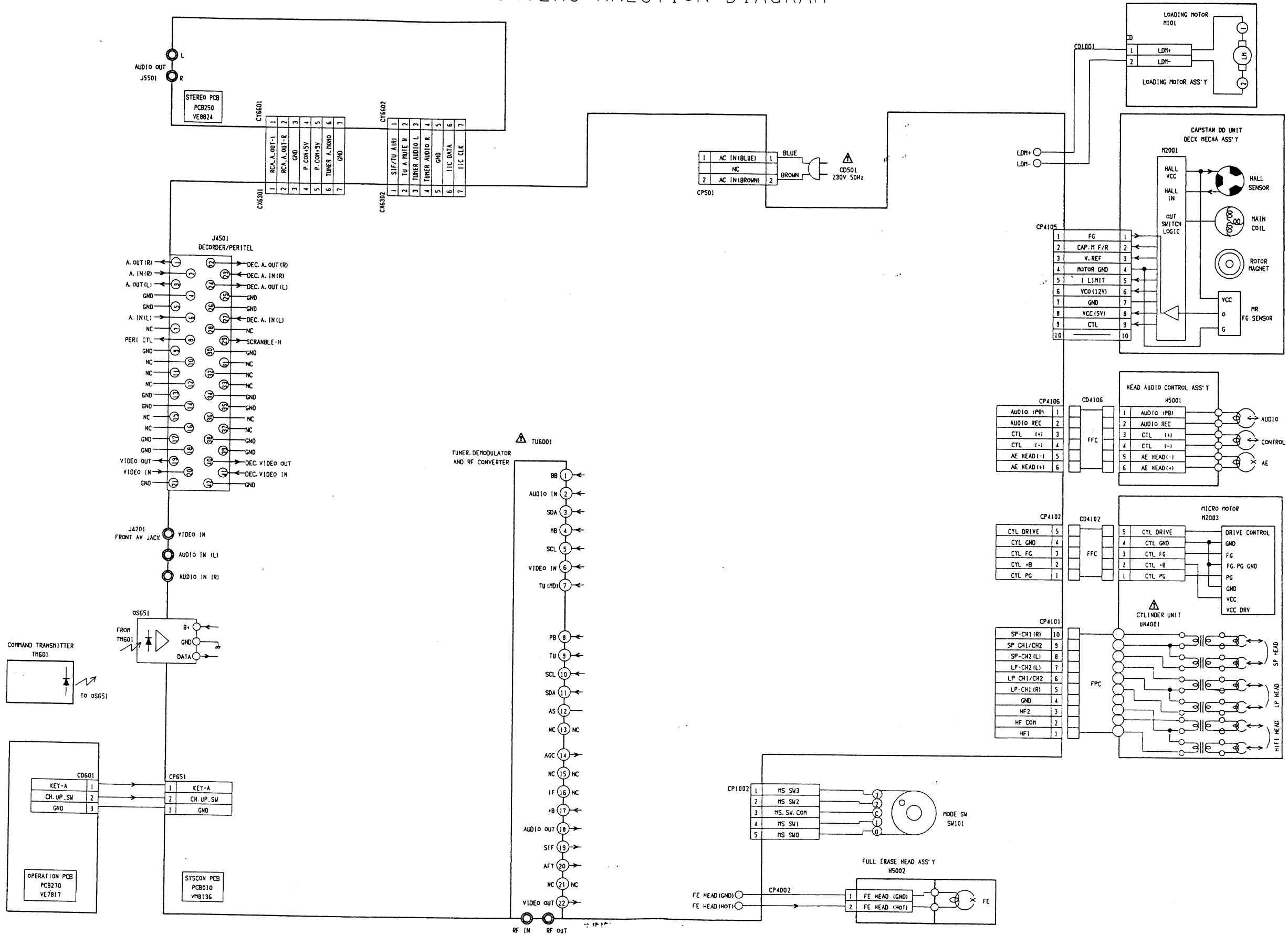


NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

PC8010 YN8136

INTERCONNECTION DIAGRAM



CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

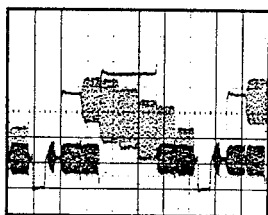
ATTENTION: LES PIECES REPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

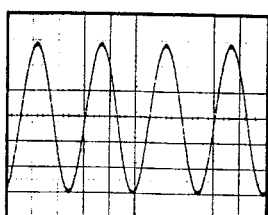
3-7698

WAVEFORMS

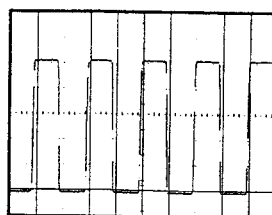
Y/C/AUDIO



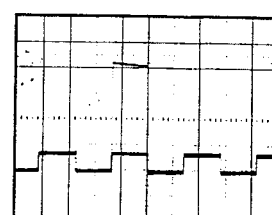
① PB/REC
0.5V 10 μ s/div



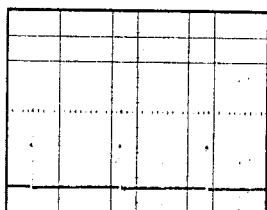
⑥ REC
200mV 0.5ms/div



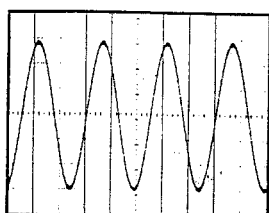
⑬ PB/REC (SP)
1V 0.1s/div



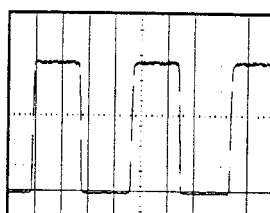
⑱ PB/REC
1V 0.5ms/div



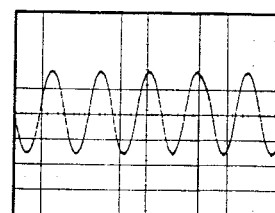
② TRICK PB
1V 5ms/div



⑦ REC
200mV 0.5ms/div

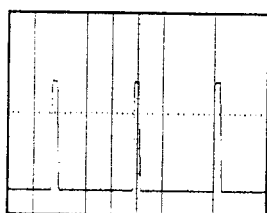


⑭ PB/REC (SP)
1V 0.1s/div

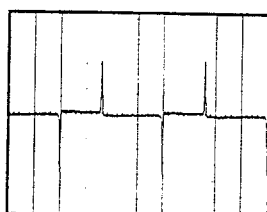


⑲ PB/REC
0.5V 0.5ms/div

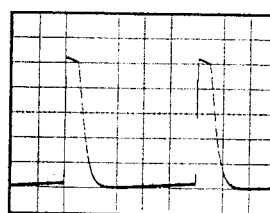
SYSCON/SERVO



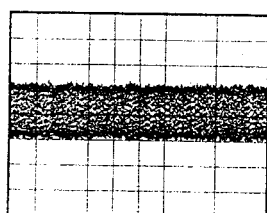
③ PB
1V 20 μ s/div



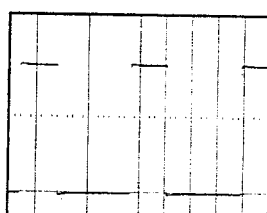
⑨ PB/REC
1V 10ms/div



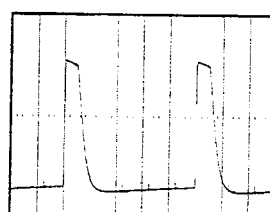
⑮ CASS LESS
1V 2ms/div



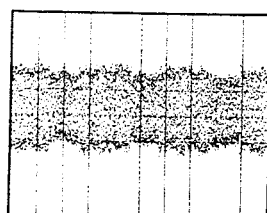
④ PB/REC
200mV 10 μ s/div



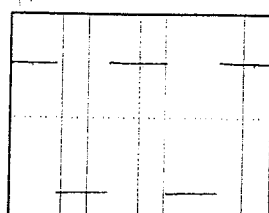
⑪ PB/REC
1V 5 μ s/div



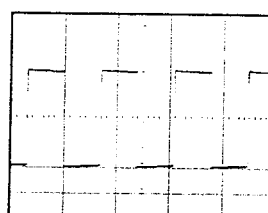
⑯ CASS LESS
1V 2ms/div



⑤ PB
100mV 20 μ s/div



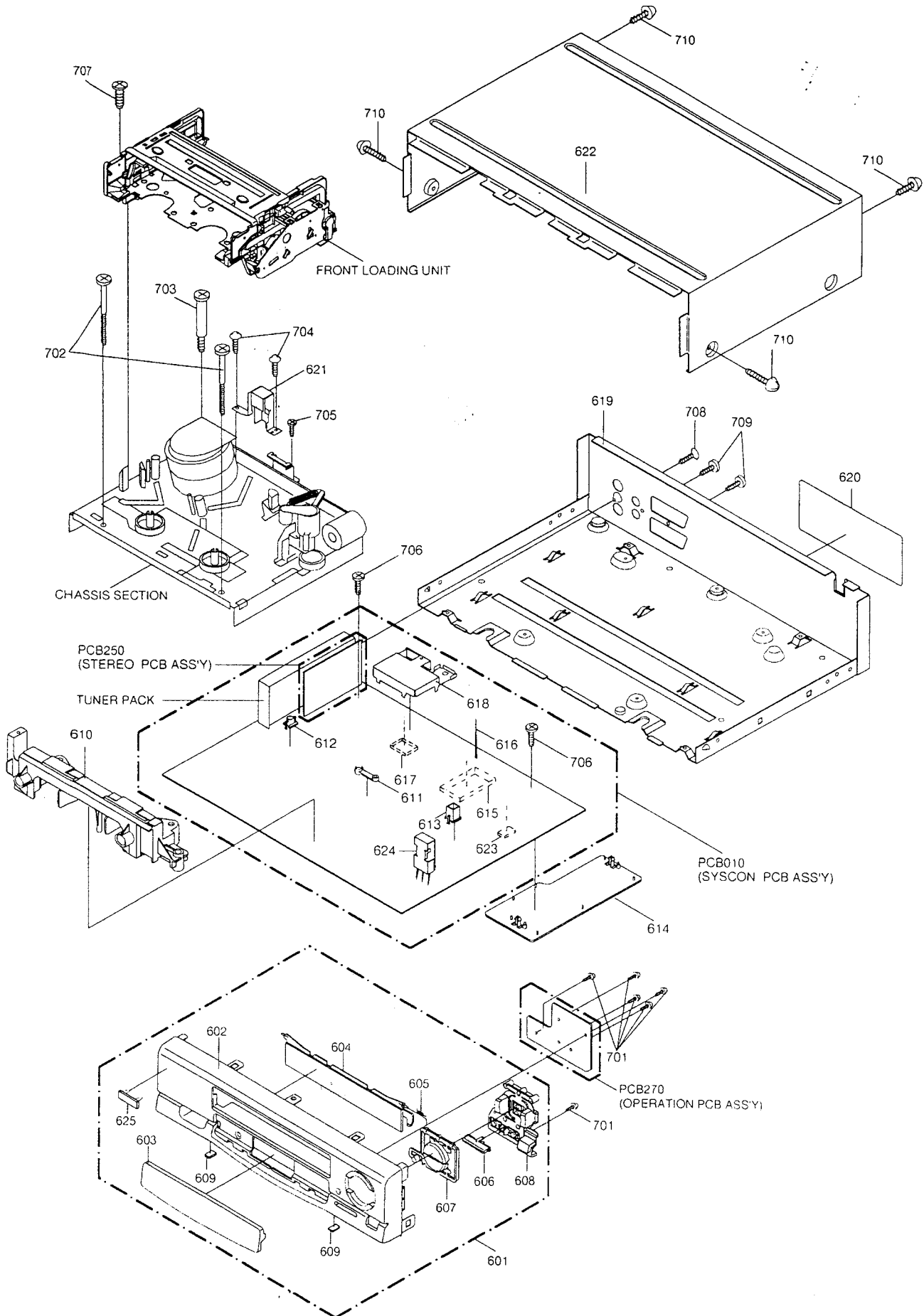
⑫ PB/REC
1V 5 μ s/div



⑰ PB/REC
1V 0.5ms/div

NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

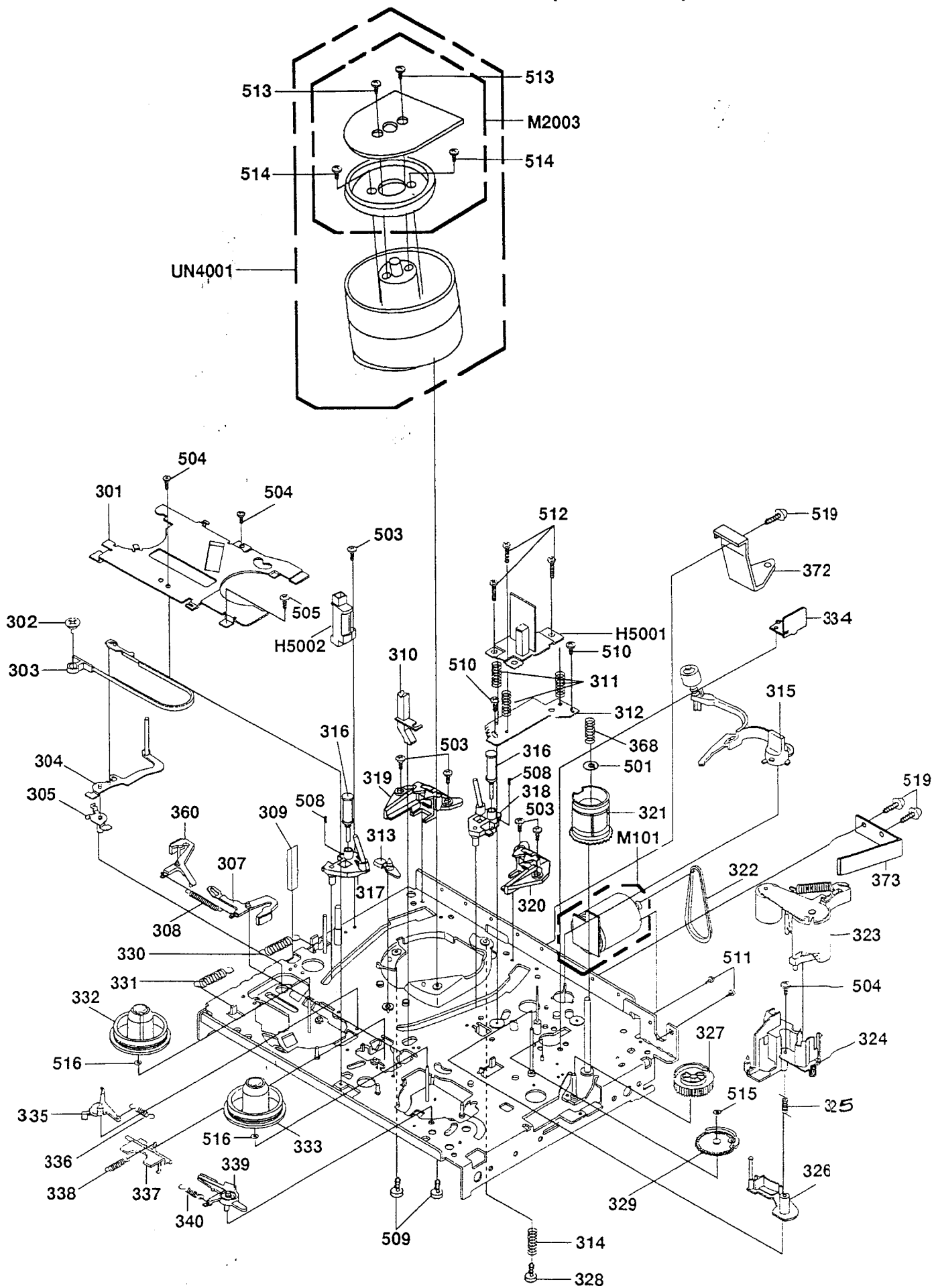
MECHANICAL EXPLODED VIEW



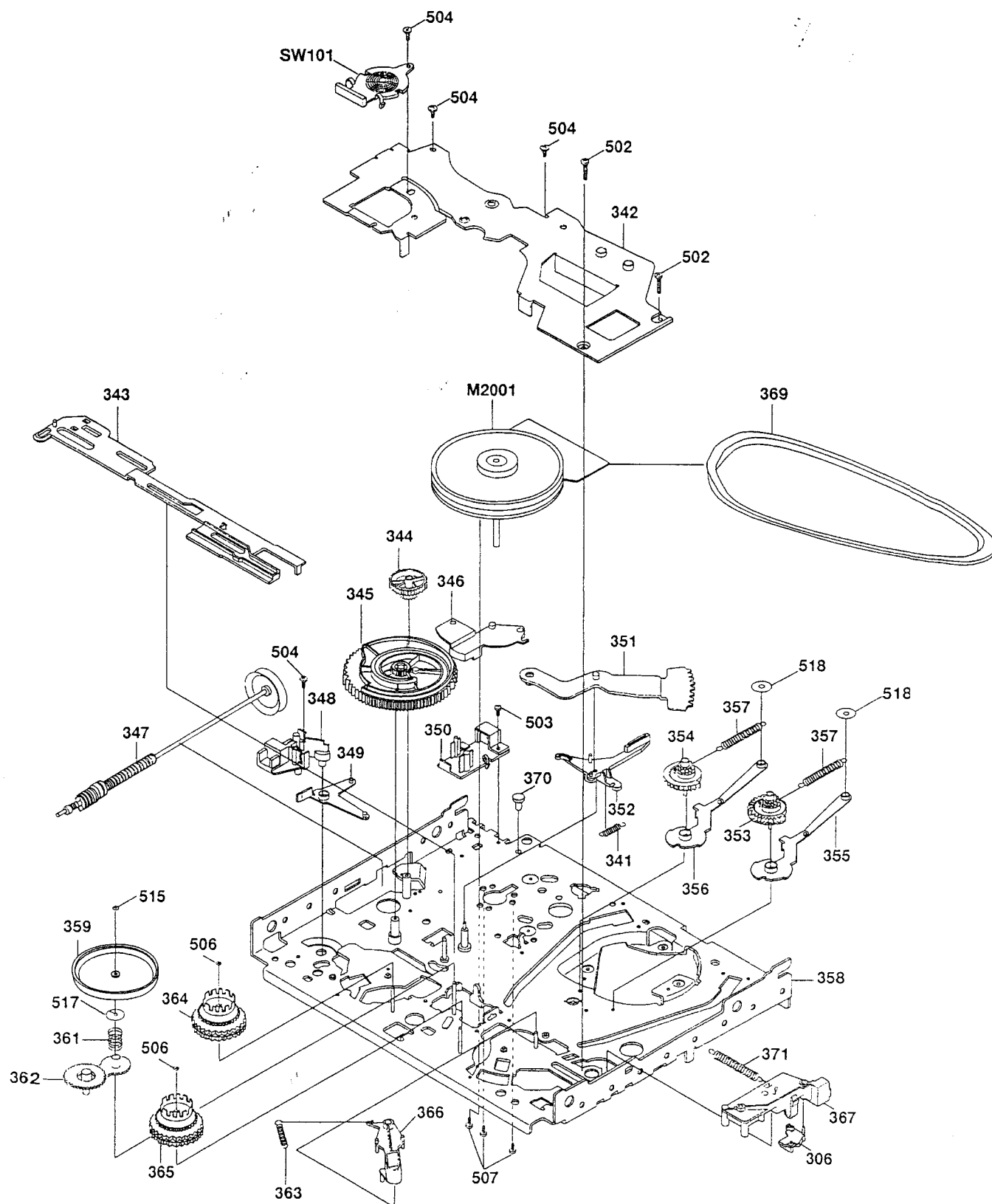
MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
601	A4C501B720	CABINET,FRONT ASS'Y
602	701WPJ0787	CABINET,FRONT
603	711WPA0100	PLATE,DISPLAY
604	712WPJ0571	FLAP
605	743WKAA001	SPRING,FLAP
606	735WPB0019	BUTTON,CHANNEL
607	735WPJ0090	BUTTON,PLAY/STOP
608	735WPJ0091	BUTTON,BASE
609	800WFA0001	CUSHION,LEG
610	701WPA0272	HOLDER,DECK
611	85OP700031	HOLDER,LED
612	754WPAA003	COVER,LED(L)
613	754WPAA004	COVER,LED (R)
614	755WPA0009	PLATE,COVER POWER
615	752WSA0132	SHIELD,AUDIO
616	----	COATING CLIP
617	752WSA0131	SHIELD,COVER HEAD AMP
618	752WSA0126	SHIELD,CASE HEAD AMP
619	702WSA0039	PLATE,BOTTOM
620	7222022444	SHEET,RATING
621	752WSA0130	SHIELD,CASE
622	702USS0025	CABINET, TOP
623	755WNA0005	SHEET,DC
624	----	HEAT SINK
625	711WPC0003	BADGE,BRAND
701	8110226084	SCREW,TAP TITE(P) BIND 2.6x8
702	8107140C04	TAP TITE(S) PAN 4x30
703	8146240604	SCREW,TAP TITE(S) BIND 4x6.4
704	8107630404	SCREW,TAP TITE(S) BRAZIER 3x4
705	8107240A04	SCREW,TAP TITE(S) BIND 4x10
706	8107230604	SCREW,TAP TITE(S) BIND 3x6
707	8110630A04	SCREW,TAP TITE(P) BRAZIER 3x10
708	8107230404	SCREW,TAP TITE(S) BIND 3x4
709	8110230604	SCREW,TAP TITE(P) BIND 3x6
710	8107240802	SCREW,TAP TITE(S) BIND 4x8
---	791UHA0012	GIFT SHEET
---	792UHA0100	PACKAGE
---	793UCD1042	GIFT BOX
---	JB5X0300	POLYBAG
---	J3A20702	GUARANTEE CARD
---	J4C50101	INSTRUCTION BOOK
---	J4C50107	QUICK SET UP SHEET

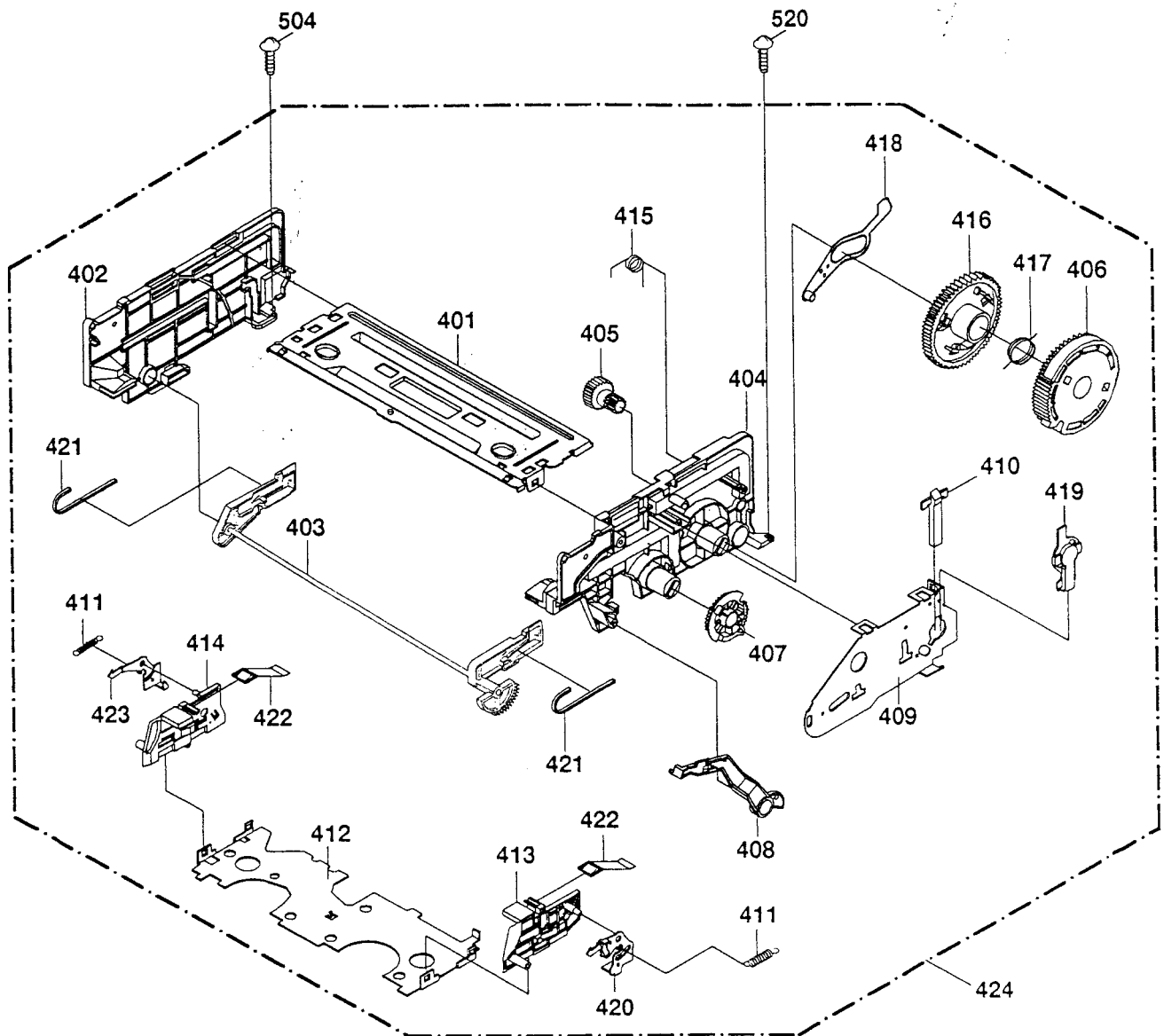
CHASSIS EXPLODED VIEW (TOP VIEW)



CHASSIS EXPLODED VIEW (BOTTOM VIEW)



FRONT LOADING UNIT EXPLODED VIEW



CHASSIS/FRONT LOADING UNIT REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
# 301	85OP600471	BRACKET,BRAKE	401	85OP900674	BRACKET,TOP(2)
302	85OP400358	ADJUST,TENSION	402	85OP900675	BRACKET,SIDE L
303	85OA400122	TENSION BAND ASS'Y	403	85OA900165	LINK ASSY
304	85OA400124	TENSION ARM ASS'Y	404	85OP900615	BRACKET,SIDE R
305	85OA400123	TENSION LEVER 2 ASS'Y	405	85OP900601	GEAR,JOINT
306	85OP600536	STOPPER,TENSION	406	85OP900602	GEAR,CAM
# 307	85OA600156	MAIN BRAKE,T ASS'Y	407	85OP900609	GEAR,LINK R
# 308	85OP800252	SPRING,MAIN BRAKE	408	85OP900672	LEVER,FLAP 2
309	85OP900564	REFLECTOR,EOT	409	85OP900616	BRACKET,SIDE R2
310	85OP400434	REFLECTOR,LED 2	410	85OP900621	REFLECTOR,BOT
311	85OP800315	SPRING,AC HEAD 2	411	85OP800296	SPRING,LOCKER
312	85OP500060	BASE,AC HEAD	412	85OP900611	CASS,HOLDER
313	85OP000394	POST,CASS GUIDE L	413	85OP900613	CASS,SIDE R
314	85OP800245	SPRING,AZIMUTH 2	414	85OP900668	CASS,SIDE L
# 315	85OA500020	AHC ASS'Y(2)	415	85OP800298	SPRING,BRACKET R
316	85OA400102	GUIDE ROLLER ASS'Y	416	85OP900608	GEAR,CLUTCH
317	85OA400161	BASE,S INCLINED ASS'Y	417	85OP800297	SPRING,CLUTCH
318	85OA400162	BASE,T INCLINED ASS'Y	418	85OP900610	LEVER,BOT
319	85OP400439	CATCHER,S	419	85OP900620	COVER,SENSOR BOT
320	85OP400440	CATCHER,T	420	85OP900606	LOCKER,R
# 321	85OP400430	CAM,PINCH ROLLER (PB)	421	85OP800294	SPRING,LINK
322	85OP600487	BELT,LOADING	422	85OP800299	SPRING,PACK
# 323	85OA400157	PINCH ROLLER (PB) BLOCK	423	85OP900605	LOCKER,L
324	85OP900541	CASS,OPENER	424	85OA900206	FRONT LOADING UNIT 14
325	85OP800264	SPRING,P5	501	82Q4070C5N	POLYSLIDER WASHER 4.1x7.0xT0.25
# 326	85OA400168	P5 ARM ASS'Y(PB)	502	8109226A64	SCREW,TAP TITE(B) BIND 2.6x16
327	85OP400342	CAM,GEAR	503	8107226804	SCREW,TAP TITE(S) BIND 2.6x8
328	8146230A14	JOINT SCREW BIND M3x11	504	8107226604	SCREW,TAP TITE(S) BIND 2.6x6
# 329	85OP400450	CAM,P5	505	8107123604	SCREW,TAP TITE(S) PAN 2.3x6
330	85OP400356	SPRING,TENSION ARM 2	506	82P166005N	POLYSLIDER WASHER(CUT) 1.6x6.0xT0.5
# 331	85OP800311	SPRING,TENSION ARM(1S)	507	8109126804	SCREW,TAP TITE(B)PAN 2.6x8
332	85OP200216	REEL S	508	815DJ20302	SET SCREW 6 CUP POINT M2x3
333	85OP200217	REEL T	509	810A130604	SCREW/WASHER(A) M3x6
# 334	85OP400446	CATCHER,P5 (VP)	510	810B126604	SCREW/WASHER(B) M2.6x6.0
335	85OP600465	SUB BRAKE,S	511	8102130304	SCREW,PAN M3.0x3.0
336	85OP800253	SPRING,S-S BRAKE	512	8102126A04	SCREW,PAN M2.6x10
337	85OP200247	ARM,JOINT	513	810A123504	SEMS A M2.3x5.0
338	85OP800262	SPRING,JOINT ARM	514	85OPAA0197	SCREW,MOTOR M3x5
339	85OA600157	SUB BRAKE T ASS'Y	515	82P266005N	POLYSLIDER WASHER(CUT) 2.6x6.0xT0.5
340	85OP800254	SPRING,T-S BRAKE	516	82Q264713N	POLYSLIDER WASHER 2.6x4.7xT0.13
341	85OP800255	SPRING,CAP BRAKE	517	82P26A005N	POLYSLIDER WASHER(CUT) 2.6x10xT0.5
342	85OP600485	PLATE,BOTTOM	518	83CST40000	CS-RING 4.0
# 343	85OA600181	ROD MAIN(S)ASS'Y	519	8107230604	SCREW,TAP TITE(S) BIND 3x6
344	85OP400341	GEAR,MIDDLE	520	8107126805	SCREW,TAP TITE(S) PAN 2.6x8
# 345	85OP600535	CAM,MAIN	H5001	1523D91032	HEAD (AUDIO CONTROL) HVMXA103 1A
# 346	85OP600468	LEVER,MAIN BRAKE	H5002	1543D02010	HEAD,FULL ERASE HVHFH0059A
# 347	85OA600159	WORM ASS'Y	M101	85OA600177	LOADING MTR ASS'Y
348	85OP600483	BRACKET,WORM F	M2001	1510398029	CAPSTAN DD UNIT F2QTB32
349	85OP600474	LEVER,RATCHET	M2003	1589V11005	MICRO MOTOR EP148B
350	85OP600484	BRACKET,WORM R	# SW101	0520244006	MODE SWITCH SRZ08064K
351	85OP300151	LEVER,LOADING	UN4001	A4C501B500	CYLINDER UNIT ASS'Y A4C501B500
352	85OA600174	CAPSTAN BRAKE ASS'Y (M.J)			
353	85OP300152	GEAR,LOADING S			
354	85OP300153	GEAR,LOADING T			
355	85OA300053	LOADING ARM S ASS'Y			
356	85OA300054	LOADING ARM T ASS'Y			
357	85OP800263	SPRING,LOADING GEAR			
# 358	85OA000226	MAIN CHASSIS ASS'Y			
359	85OP200213	CENTER PULLEY			
360	85OA600155	MAIN BRAKE S ASS'Y			
361	85OP800261	SPRING,C-PULLEY			
# 362	85OA200065	ARM IDLER ASS'Y			
363	85OP800270	SPRING,LEVER TENSION			
# 364	85OA200064	CLUTCH GEAR T ASS'Y			
# 365	85OA200070	CLUTCH GEAR S(S)ASS'Y			
366	85OP400360	LEVER,TENSION			
# 367	85OP400452	HOLDER,TENSION(S)			
368	85OP800310	SPRING,CAM PINCH			
369	85OP200215	BELT,CAPSTAN			
370	85OP000443	SPACER,CAPSTAN			
371	85OP800256	SPRING,MAIN ROD			
372	761WSA0044	ANGLE,DECK BACK			
373	762WSA0039	ANGLE,DECK			

Note: Some parts labeled # are not compatible, but they are very similar before servicing, be sure to check the parts in the INFORMATION FOR USING THE DECK PARTS (OVD-5) for the repair. Because if you use wrong parts, the deck or tape will be damaged.

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
RESISTORS				TRANSISTORS			
R515	R3K28A823J	R,METAL OXIDE	82K OHM 2W	Q1006	0002700530	PHOTO COUPLER	RPI-352Q01
△ R526	R3118A010J	R,METAL OXIDE	1 OHM 2W	Q1007	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
△ R529	R3K181471J	R,METAL	H 470 OHM 1W	Q4003	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
△ R531	R61584101J	R,FUSE	100 OHM 1/4W	Q4004	TCWT022740	TRANSISTOR,SILICON	2SC2274(E,F)-AA
R532	R001T4103J	RC	10K OHM 1/4W	Q4005	TCWT022740	TRANSISTOR,SILICON	2SC2274(E,F)-AA
△ R537	R635843R9J	R,FUSE	3.9 OHM 1/4W	Q4007	TCKT013170	TRANSISTOR,SILICON	2SC1317(Q,R,S)-T
△ R1087	R635812R7J	R,FUSE	2.7 OHM 1W	Q4008	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
R4512	R001T6103J	RC	10K OHM 1/6W	Q4009	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
R4529	R002T2101J	RC	100 OHM 1/2W	Q4010	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
CAPACITORS				Q4011	TCKT013170	TRANSISTOR,SILICON	2SC1317(Q,R,S)-T
C501	C0JFE0514M	CC	0.01 UF 500V E	Q4012	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
△ C504	P2162B104M	CMP	0.1 UF 250V AC	Q4013	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146
△ C505	CB3LE0ML3M	CC	0.0033UF 250V	Q4102	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
△ C506	CB3930ML3M	CC	0.0033UF 250V	Q4103	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
C508	E02TFH680M	CE	68 UF 400V	Q4501	TNYJB05001	COMPOUND TRANSISTOR	DTC114EKAT146
C523	C0300R6H2K	CC	220 PF 1KV R	Q4502	TAYT0933S0	TRANSISTOR,SILICON	2SA933STP(R,S)
C4516	CHG0SL4Q1J	CC	47 PF 50V SL	Q4503	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
DIODES				Q4802	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
D501	D2LXE65800	DIODE,SILICON	1N4005E-G23	Q5501	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
△ D502	D2LXE65800	DIODE,SILICON	1N4005E-G23	Q6303	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
△ D503	D2LXE65800	DIODE,SILICON	1N4005E-G23	Q6602	TCYT1740S0	TRANSISTOR,SILICON	2SC1740SP(R,S) TP
△ D504	D2LXE65800	DIODE,SILICON	1N4005E-G23	Q6603	TCYT1740S0	TRANSISTOR,SILICON	2SC1740SP(R,S) TP
△ D506	D97U03001B	DIODE,ZENER	MTZJ30B T-77	COILS & TRANSFORMERS			
△ D507	D2LXE65800	DIODE,SILICON	1N4005E-G23	△ L501	029D000076	COIL,LINE FILTER	ELF15N003A
D510	D1VT001330	DIODE,SILICON	1SS133T-77	L504	02167H220K	COIL	22 UH
D511	D1VT001330	DIODE,SILICON	1SS133T-77	L505	021W66220M	COIL,CHOKE	22 UH
△ D512	D2BTOAK040	DIODE,SCHOTTKY BARRIER	AK04V0	L701	021673101K	COIL	100 UH
△ D513	D13TGMA020	DIODE,SILICON	GMA-02-BT	L1001	02167H220K	COIL	22 UH
△ D514	D2BTRU2YX0	DIODE,SILICON	RU2YX-V1	L1002	02167H220K	COIL	22 UH
△ D515	D2LXE65800	DIODE,SILICON	1N4005E-G23	L4002	021LA6100K	COIL	10 UH
△ D516	D28T11ESN1	DIODE,SILICON	11ES1N-TA1B2	L4003	021QA6151K	COIL	150 UH
D518	D1VT001330	DIODE,SILICON	1SS133T-77	L4004	021LA6330K	COIL	33 UH
D519	D28XQS04N0	DIODE,SCHOTTKY	11EQS04N-TA2B5	L4005	02167D101K	COIL	100 UH
D520	D1VT001330	DIODE,SILICON	1SS133T-77	L4006	021673101K	COIL	100 UH
D521	D1VT001330	DIODE,SILICON	1SS133T-77	L4007	021673101K	COIL	100 UH
△ D522	D97U03301B	DIODE,ZENER	MTZJ33B T-77	L4008	021673101K	COIL	100 UH
D523	D1VT001330	DIODE,SILICON	1SS133T-77	L4010	021673102K	COIL	1 MH
D524	D1VT001330	DIODE,SILICON	1SS133T-77	L4011	031622001R	COIL,BIAS OSC	1622001
D525	D2LXE65800	DIODE,SILICON	1N4005E-G23	L4101	021673101K	COIL	100 UH
D526	D97U06R21B	DIODE,ZENER	MTZJ6.2B T-77	L4102	021673101K	COIL	100 UH
D527	D2BTOEG01C	DIODE,RECTIFIER	EG-01C	L4103	021QA6471K	COIL	470 UH
D1001	0001300030	LED	SLR-938C-4-AB	L4201	021LA6100K	COIL	10 UH
D1024	D2LXE65800	DIODE,SILICON	1N4005E-G23	L4202	021LA6100K	COIL	10 UH
D4002	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77	L4503	021673101K	COIL	100 UH
D4004	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77	L4504	021LA6220K	COIL	22 UH
D4101	D1VT001330	DIODE,SILICON	1SS133T-77	L4505	021673101K	COIL	100 UH
D4102	D1VT001330	DIODE,SILICON	1SS133T-77	L4506	021LA6220K	COIL	22 UH
D4515	D97U015010	DIODE,ZENER	MTZJ15 T-77	L4507	021LA6220K	COIL	22 UH
D6609	D1VT001330	DIODE,SILICON	1SS133T-77	L4508	021LA6220K	COIL	22 UH
ICS				L4509	021LA6220K	COIL	22 UH
△ IC501	I0Q90431L0	IC	NJM431L	L4510	021LA6220K	COIL	22 UH
△ IC502	I05TA7810S	IC	TA7810S(LBS20EC2)	L4513	021LA6100K	COIL	10 UH
△ IC503	I0BT065350	IC	STR-F6535	L4514	021LA6100K	COIL	10 UH
IC651	I0XF516313	IC	UPD16313	L4515	021LA6100K	COIL	10 UH
IC703	I3ED656500	IC	SDA5650	L4802	021673101K	COIL	100 UH
IC1001	I56F57031A	IC	OEC7031A	L4803	021673101K	COIL	100 UH
IC1002	I53D08FB60	IC	ST24C08FB6	L4806	021LA6330K	COIL	33 UH
IC1003	IE1J031AA0	IC	RE5VL31AA-TZC	L4807	021LA6390K	COIL	39 UH
△ IC1004	I05S07291S	IC	TA7291S	L5501	021673101K	COIL	100 UH
IC4001	I05F01278A	IC	TA1278AF	L5503	021673101K	COIL	100 UH
IC4101	ID5F1273F0	IC	TA1273F	L6301	021673101K	COIL	100 UH
IC4501	I03F071570	IC	LA7157M	L6302	02167D101K	COIL	100 UH
IC4801	I53F3031A0	IC	OEC3031A	L6304	02167D101K	COIL	100 UH
IC5501	I03F726200	IC	LA72620M	L6601	021LA6680K	COIL	68 UH
IC6602	I0KDF98400	IC	TDA9840	L6604	03361Z001R	COIL,SOUND IFT	361Z001
IC6603	I05SB8721A	IC	TA8721ASN	L6605	02167D101K	COIL	100 UH
TRANSISTORS				L6606	021LA6100K	COIL	10 UH
△ Q501	TBWT009260	TRANSISTOR,SILICON	2SB926(S,T)-AA	L6607	021673101K	COIL	100 UH
Q504	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	T501	0481290094	TRANSFORMER SWITCHING	8 8129009
Q505	TNYJA05001	COMPOUND TRANSISTOR	DTC143EKAT146	T4001	0306260038	COIL BIAS OSC	3626003
△ Q509	TBWT009260	TRANSISTOR,SILICON	2SB926(S,T)-AA	JACKS			
△ Q511	000210001R	PHOTO COUPLER	ON3171R	J4201	0607131009	JACK RCA 3.5	LPR1251-0121
Q1001	0002700530	PHOTO COUPLER	RPI-352Q01	J4501	063G100041	SOCKET,21PIN	035_0_8083_00
Q1002	0000300340	TRANSISTOR,PHOTO	SPS-1118C-C-T1	J5501	0602401017	JACK PLATE	JPJ0911-01-023
Q1003	TCYT2872S0	TRANSISTOR,SILICON	2SC2872S	SWITCHES			
Q1004	0000300340	TRANSISTOR,PHOTO	SPS-1118C-C-T1	SW601	0504201T32	SWITCH,TACT	SKQNAE039A
Q1005	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146	SW602	0504201T32	SWITCH,TACT	SKQNAE039A

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
SWITCHES			
SW603	0504201T32	SWITCH,TACT	SKQNAE039A
SW604	0504201T32	SWITCH,TACT	SKQNAE039A
SW605	0504201T32	SWITCH,TACT	SKQNAE039A
SW606	0504201T32	SWITCH,TACT	SKQNAE039A
SW607	0504201T32	SWITCH,TACT	SKQNAE039A
SW608	0504201T32	SWITCH,TACT	SKQNAE039A
SW1001	0550322004	SWITCH,LEAF	HXW0394-010010
P.C.BOARD ASSEMBLES			
PCB010	A4C501B01A	PCB ASS'Y	VM8136A
PCB250	A4C501B25A	PCB ASS'Y	VE8824A
PCB270	A4C501B27A	PCB ASS'Y	VE7817A
MISCELLANEOUS			
B502	0246T03584	CORE,BEADS	BF40DTA-3.5X6X1
B504	0246T03584	CORE,BEADS	BF40DTA-3.5X6X1
B505	0246T03584	CORE,BEADS	BF40DTA-3.5X6X1
BT601	1412004008	BATTERY,MANGAN	R03(AB)E_20_T
CD501	1206655806	CORD,AC BUSH	E2N 6FEE
CD601	06CH23042A	CORD,EIS CONNECTOR	CH23042A
CP501	0694430100	CORD,UX CONNECTOR	2-173270-3
CP651	069E230129	CONNECTOR PCB SIDE	8283_0312_00_000
CD1001	06CH22074A	CORD,EIS CONNECTOR	CH22074A
CD4102	122L052005	CORD,JUMPER	2L052005
CD4106	122L061101	CORD,JUMPER	2L061101
CD6002	06CZL05015	RF CABLE PAL FTZ	D-2070 or
	06CDL05022	RF CABLE PAL FTZ	EU271CS-2
CF4502	1162LTQ2M1	FILTER EMI	DSS306-93B471M10
CF4504	1162LTQ2M1	FILTER EMI	DSS306-93B471M10
CF6601	1012T5R742	FILTER,CERAMIC	SFE5.74MC2-TF21
CF6602	1012T5R702	FILTER,CERAMIC DISCRI	CDSH5.74MC39KTF2
CP1002	0697150310	CONNECTOR PCB SIDE	TAS-X05X-D1
CP4002	06CH22070A	CORD CONNECTOR	CH22070A
CP4101	06977A0590	CONNECTOR PCB SIDE	TOC-T10X-B1
CP4102	069R750028	CONNECTOR PCB SIDE	52045-0545
CP4105	06972A0580	CONNECTOR PCB SIDE	TKC-G10P-A1
CP4106	069R760028	CONNECTOR PCB SIDE	52045-0645
CUS011	800WF00004	CUSHION-A	
CUS013	800WF00019	CUSHION-C	
CX6301	069J170038	CONNECTOR PCB SIDE	IMSA-9130B-07
CX6302	069J170038	CONNECTOR PCB SIDE	IMSA-9130B-07
CY6601	069J170028	CONNECTOR PCB SIDE	IMSA-9131S-07L
CY6602	069J170028	CONNECTOR PCB SIDE	IMSA-9131S-07L
△ F501	080PT1R602	FUSE	21801.6
FH501	06710T0006	HOLDER,FUSE	EYF-52BC
FH502	06710T0006	HOLDER,FUSE	EYF-52BC
OS651	0771000013	REMOTE RECEIVER	PNA4612M00YB
TM601	07660BM070	TRANSMITTER	SBHR10007A
△ TU6001	0162601009	RF UNIT	TMLG2-104A
V651	096F79R004	TUBE FLUORSCENT DISPLAY	SVV-07SS22
X1001	100CA01203	CRYSTAL	HC-49/U-S
X1002	100C32R803	CRYSTAL	DSVT-200
X4001	100CA4R404	CRYSTAL	HC-49/U-S
X6602	100WA01003	CRYSTAL	HC-49/U

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

SPEC.NO.	M4C5-01B
O/R NO.	U854541